



Cold Water Safety and Survival: Volume 2

Surviving Outdoor Adventures

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This publication is a product of the Alaska Marine Safety Education Association (AMSEA) whose mission is to reduce injury and the loss of life, due to drowning and hypothermia, through education and training.

AMSEA is supported by the following organizations: Alaska Vocational Technical Center (AVTEC); University of Alaska Marine Advisory Program; North Pacific Fishermen's Association; North Pacific Fisheries Observer Training Center; Alaska Native Tribal Health Consortium; Southeast Alaska Regional Health Consortium, Environmental Health; Alaska Department of Fish and Game; Petersburg Vessel Owners Association; Alaska Department of Health and Human Services, Community Health and Emergency Medical Services Section; National Institute of Occupational Safety and Health, Division of Safety Research; U.S. Coast Guard 17th District, Maritime Office of Compliance (MOC).

This publication was made possible by funding from the U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA), Rural Health Outreach; the Alaska Department of Community and Regional Affairs; the Alaska Department of Health and Social Services, Division of Public Health; the Reuben E. Crossett Endowed Alaskan Fund; and the Sitka, Alaska, School District Migrant Education Program.

New lesson plans and additional teaching resources can be found on AMSEA's Web site www.amsea.org.

Elmer E. Rasmuson Library Cataloging in Publication Data:

Cold water safety and survival / editors: Marian Allen . . . [et al.]. — Fairbanks, Alaska : University of Alaska Sea Grant College Program, 2002.

350 p. : ill. ; cm. — (Surviving outdoor adventures ; v.2)

Note: Curriculum for grades 3-12.

Includes bibliographical references.

1. Survival skills—Study and teaching (Elementary)—Alaska.
 2. Life preservers—Study and teaching (Elementary)—Alaska.
 3. Boating for children—Study and teaching (Elementary)—Alaska.
 4. Cold—Physiological effect—Study and teaching (Elementary)—Alaska.
 5. Hypothermia—Study and teaching (Elementary)—Alaska.
- I. Title. II. Allen, Marian. III. Series: Surviving outdoor adventures ; v.2.

GF86.C65 2002

ISBN 1-56612-074-8

Credits

This book is published by the University of Alaska Sea Grant College Program, which is cooperatively supported by the U.S. Department of Commerce, NOAA National Sea Grant Office, Grant no. NA86RG-0050, projects A/151-01 and A/161-01; and by the University of Alaska Fairbanks with state funds. The University of Alaska is an affirmative action/equal opportunity institution. Cover design by Dixon Jones, copyedit by Sue Keller, layout and design by Sue Mitchell, Inkworks, Fairbanks, Alaska.

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Welcome to Surviving Outdoor Adventures!

Surviving Outdoor Adventures is a K-12 curriculum designed to be used in its entirety or in parts to help you prepare children and young adults to play and work safely in the outdoors and around cold water. This curriculum consists of four volumes:

1. *Survivor!* (for Kindergarten through second grade)
2. *Cold Water Safety and Survival* (for third through twelfth grades)
3. *Small Boat Safety and Survival* (for third through twelfth grades)
4. *Land Safety and Survival* (for third through twelfth grades)

Each volume can be used alone and contains:

- Instructional units—each with objectives, an activities guide, background information, a variety of student activities, and content standards
- Overhead masters (except in *Survivor!*)
- Resources

Each instructional unit has an introduction page that summarizes the unit’s rationale and goals. Used with the unit’s activities guide, it provides a tool for you to choose the topics and activities that will be most relevant to your students and their outdoor safety and survival. Activities are approached in a variety of ways and incorporate the following Content Standards subjects: Language Arts, Mathematics, Science, Geography, Government and Citizenship, History, Skills for a Healthy Life, Arts, World Languages, Technology, Library/Information Literacy, and Cultural Standards (*Alaska Content Standards*, 2000 edition).



Acknowledgments

The curriculum content of this series was adapted from the Alaska Marine Safety Education Association's (AMSEA) Marine Safety Instructor Training Manual, 8th edition, 2001, and *Outdoor Adventures*, 2000 edition. Additional editing and/or activities were contributed by: Dolly Garza, University of Alaska Marine Advisory Program, Ketchikan, Alaska; Carol Scott, Fairbanks North Star Borough School District, Fairbanks, Alaska; Annette Blankenship, Susan Brown, Jetta Budd, Pauline Duncan, Margie Esquiro, Sherry Foster, Shay LeBeau, Kay McCarthy, Mike Morris, Mary Stevens, Sitka School District, Sitka, Alaska; Jenny Baird, Janice Huls, Susan Jensen, Kathy O'Gara, Kristie Sherrodd, Sitka, Alaska; Peter Kokes, Gustavus School, Gustavus, Alaska; Jane Eisemann, Louis Martinez, Kodiak Borough School District, Kodiak, Alaska; Al Hill, Hoonah School District, Hoonah, Alaska; Matt Anderson, Henry Hopkins, Dennis Early, Juneau, Alaska; Sue Hargis, Sue Jorgensen, U.S. Coast Guard 17th District, Maritime Office of Compliance (MOC), Juneau, Alaska; Anna Borland-Ivy, Brenda Dolma, Homer School District, Homer, Alaska; Bernie Gurule, Lake and Peninsula School District, King Salmon, Alaska; Dr. Martin Nemiroff, Sonoma, California; Richard Hiscock, ERE Associates, North Chatham, Massachusetts; Russ Page, National Weather Service, Anchorage Forecast Office, Anchorage, Alaska; George Ackerman, Metlakatla School,

Metlakatla, Alaska; Shawn-Marie Carpenter, Ketchikan School District, Ketchikan, Alaska; Terry Sherwood, Anchorage School District, Anchorage, Alaska; Shannon Vandervest, Petersburg School District, Petersburg, Alaska; Leslie Lymen, Juneau School District, Juneau, Alaska; and Elizabeth "Tizzy" Bennett, Children's Hospital and Regional Medical Center, Seattle, Washington.

Illustrations were provided by: Nancy Behnken, Kristie Sherrodd, Vern Culp, Steve Lawrie, K. Lundquist, and Julie Schmitts. Tide and correction tables were provided by Alaska Tidal Book Company, Kenai, Alaska. Newspaper articles were reprinted with permission from Associated Press, Anchorage, Alaska; Canadian Press, Toronto, Ontario; Cape Cod Times, Hyannis, Massachusetts; Daily Sitka Sentinel, Sitka, Alaska; Seward Phoenix Log, Seward, Alaska. Stories from *Saved by the Jacket* were reprinted with permission from the National Safe Boating Council, Delaware, Ohio. The Refusal Skill™ is used with permission from the Comprehensive Health Education Foundation, Seattle, Washington.

Volume 2: Cold Water Safety and Survival

Why teach cold water survival? According to the National Safety Council, drowning is the second leading cause of accidental death among children nationwide. U.S. Coast Guard statistics from 1998 show that 80% of the boaters who drowned were not wearing a personal flotation device (PFD). Using the information and activities in this volume, you can help children and young adults learn how to prepare for cold water activities and increase their chances of survival in a cold water emergency. Your students can learn how to be survivors instead of statistics!

How to Use Volume 2: Cold Water Safety and Survival

Cold Water Safety and Survival contains three units presenting the latest information on:

1. hypothermia,
2. personal flotation devices, and
3. cold water survival.

Whether you are teaching one lesson, a semester, or a year-long program, this volume provides information and activities needed to cover cold water safety and survival.

Although *Cold Water Safety and Survival* can stand alone from the other volumes, its information and activities are sequential; each unit assumes knowledge of the material in the preceding unit.

Pool and cold water activities are recommended as the culminating events in this volume.

Getting around Volume 2: Cold Water Safety and Survival

Each of the three units in this volume contains:

- **Overview:** the unit rationale and goals.
- **Teacher Information:** in-depth background information presented in outline form to provide teachers with the latest information on cold water survival. Icons appear in the margin to indicate where overhead masters may be used to reinforce content and concepts. Teachers are advised to use their judgment when presenting this material; some concepts and activities may not be suitable for younger children.
- **Activities Guide:** a teacher's planning guide with a list of activities that coincide with major topics in the Teacher Information, and a brief summary of each activity, its objectives, Alaska Content Standards, and page numbers.
- **Activities:** stand-alone lessons that include an overview, objectives, materials list, procedures, Alaska Content Standards, plus student handouts, answer keys, and templates.



Permission Forms and Waivers

Any hands-on activity carries risk of injury to participants. AMSEA is not responsible for injuries resulting from the activities in this publication. Teachers are strongly encouraged to follow the safety guidelines in the activities and provide proper supervision and organization. This is especially critical for in-water activities. Instructors are encouraged to co-teach and report to AMSEA safety problems or concerns that arise.

It is strongly suggested that instructors get signed permission forms for each student participating in hands-on activities. It is especially important that students' parents/guardians note any health problems or physical considerations that may limit students' participation. A sample form follows.

A sample liability form (waiver) is also included in case you are not instructing under the liability protection of a school or other organization. Check with the organization you are working under regarding your liability. It is up to the instructor to ensure that they have proper liability protection.

Surviving Outdoor Adventures Permission Slip

I give my permission for _____ to participate in the water or land safety and survival training exercise field trip as part of

Mr./Ms. _____ class. Staff and students will be traveling to _____ on date(s) and time(s) _____.

_____ We will be taking the bus to and from the school.

_____ We will be walking to and from the school

Please list any special needs or concerns your child may have _____

Parent/Guardian Signature _____ Date _____

Printed name _____

..... 

Surviving Outdoor Adventures Permission Slip

I give my permission for _____ to participate in the water or land safety and survival training exercise field trip as part of

Mr./Ms. _____ class. Staff and students will be traveling to _____ on date(s) and time(s) _____.

_____ We will be taking the bus to and from the school.

_____ We will be walking to and from the school

Please list any special needs or concerns your child may have _____

Parent/Guardian Signature _____ Date _____

Printed name _____



Sample Waiver Form

Waivers are a controversial topic. Some legal experts believe they limit liability by making students aware of hazards, while others believe they increase liability. Instructors should make their own choice, consulting a lawyer if necessary to make a decision. If you use a waiver in your class, get it signed *before* the class begins. Parents should never be pressed to sign a waiver. A sample follows.

Cold Water Survival Program Assumption of Risk and Waiver & Release

I, _____ (print name) recognize the activity in which my child desires to participate involves a risk of injury. I am aware and accept the risks involved, which may include but are not limited to: striking objects when entering water, cardiac arrest, ventricular fibrillation, inadvertent gasping and inhalation of water, sudden drowning syndrome, or drowning from other causes, hypothermia, falls from walking on slippery beaches or woods, and other injuries which may occur due to the use of safety and survival equipment such as distress flares, liferafts, personal flotation devices, dewatering pumps, fire extinguishers, etc.

I hereby execute this release as a condition of and in partial consideration for allowing my child to participate in all or a portion of the cold water training program conducted by _____ . I am familiar with the activities and events that will be included in this training and I have read a copy of the schedule of activities in which my child is to participate. I have read and voluntarily signed this release, waiver of liability and indemnity agreement, intending legally to be bound, and I further agree that no oral representations, statements, or inducements apart from those contained in this release have been made to me.

I hereby release, discharge, and covenant not to sue _____ , its agents, employees, representatives, officers, directors, members, and all other persons acting for _____ and all instructors, participants and advertisers (hereinafter called "Releasees") from all liability. This includes me, my child, my personal representatives, heirs, assigns, and next of kin, for any and all loss or damage and any claim or demands thereof on account of injury to my child, his/her or property or his/her death, whether caused by the negligence of the Releasees or otherwise, as the result of my child having participated in any portion of the program.

I hereby agree to indemnify and save and hold harmless the Releasees and each of them from any loss, liability, damage, or cost they might incur due to my child's participation in the survival program in any manner and assume responsibility for, and the risk of, bodily injury, death, or property damage due to the negligence of Releasees or otherwise, resulting from my child's participation in the program. I acknowledge that my child's health and physical condition will allow him/her to perform the activities in this training.

IN WITNESS THEREOF, I have executed this release on _____ (date)

Releasor signature _____

Printed name _____

Please list any health problems or injuries that may limit your child's participation on the back of this page and return to instructor.



Unit 1: Hypothermia

Unit Rationale

Understanding the fundamental principles of hypothermia is essential for outdoor safety and survival because hypothermia is a life-threatening condition that is a killer of the unprepared. It is especially important to understand the dangers of immersion hypothermia—many deaths attributed to drowning are actually caused by hypothermia. As a result of recent research, important new knowledge in the prevention and treatment of hypothermia is now available. This unit presents information that can help save lives!

Unit Goal

To develop an understanding of the principles and dangers of hypothermia in order to be able to prevent, recognize, and treat hypothermia.

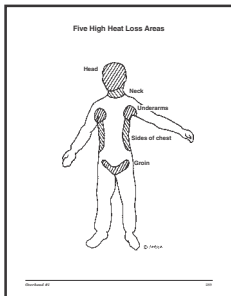
Hypothermia: Teacher Information

The information in this section gives teachers a background in the topic. Use your judgment when presenting this material; some concepts may not be suitable for younger children.

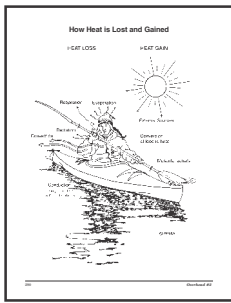
The hypothermia signs, symptoms, and treatment described here are based on guidelines developed by the State of Alaska and revised in 1996. Consult your state Emergency Medical Services office for current recognition and treatment guidelines. It is important to keep current with new developments in this field.

Hypothermia Definitions

- A. Hypothermia is a drop in body core temperature
 - 1. Hypo = under, beneath, less than
 - 2. Thermia = having to do with heat or temperature
 - 3. Core = inside head and trunk where vital organs like brain, heart, and lungs are
- B. Dry hypothermia—also called chronic, land, slow onset
 - 1. Onset can be extremely slow and can occur in relatively mild conditions
 - 2. Sometimes difficult to recognize
- C. Immersion hypothermia—also called acute, wet, rapid onset
 - 1. Onset is rapid due to heat loss in water from conduction and convection
 - 2. Loss of muscle coordination decreases ability to self-rescue and increases rescue difficulties and likelihood of drowning
- D. Mild hypothermia = you are beginning to lose ability to compensate for heat loss
- E. Severe hypothermia = you lose ability to produce heat and rewarm yourself
- F. High heat loss areas (see Overhead #1)
 - 1. Head—you lose 50% of your body's heat through your head
 - 2. Neck
 - 3. Underarms
 - 4. Sides of chest
 - 5. Groin
- G. Afterdrop = when body temperature continues to fall after victim is moved to warm environment
 - 1. Degree of afterdrop is directly related to rapidity of cooling—colder water means greater degree of afterdrop
 - 2. Can be life-threatening if not treated appropriately
- H. Cold water = water less than 91°F



Overhead #1

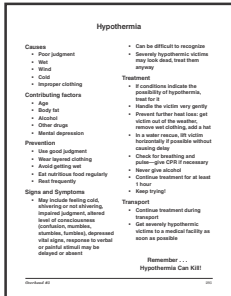


Overhead #2

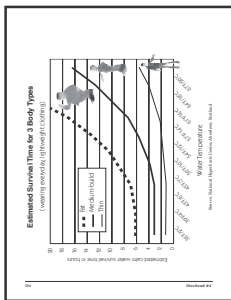
Heat Gain vs. Heat Loss (see Overhead #2)

- Any time you lose more heat than you produce, hypothermia results
 - Without adequate food and clothing or external heat sources, your core temperature cannot be maintained except in tropical climates.
- A. Your body at rest loses more heat than it generates
 1. In air less than 80° F
 2. In water less than 91° F
 - B. Heat regulation
 1. Your body tries to maintain normal body temperature (usually 98.6° F, 37° C)
 2. Your body reduces circulation to extremities when you get cold
 - C. How your body gains heat
 1. Muscle activity
 - a. Initially may increase body heat
 - b. May be voluntary or involuntary (shivering)
 - c. Without adequate food, water, and rest, activity leads to exhaustion
 2. Food
 - a. Required for your body to generate heat
 - b. You need more food when under stress
 - c. You cannot fully compensate for environmental cooling by eating—you also need to insulate your body
 3. External heat sources (for example, warm food or drinks, sunlight, fire) can help maintain body temperature
 - F. Your body loses heat five ways
 1. Radiation
 - a. Your body is like large radiator, giving off heat to environment 24 hours a day
 - b. To minimize, insulate body well, drink water, and eat
 2. Respiration
 - a. Air cooler than your body is inhaled, warmed, then exhaled
 - b. To minimize, breathe through your nose or a scarf
 3. Conduction
 - a. Occurs when in contact with a cold surface
 - b. Is 25 times faster in water than in still air
 - c. To minimize, stay as dry as possible and insulate yourself from cold surfaces
 4. Evaporation
 - a. Heat is lost when sweat or water on skin evaporates
 - b. To minimize, reduce exposure to precipitation and sweating
 - (1) Use a waterproof outer layer as appropriate
 - (2) Regulate temperature with layers of clothing
 - (3) Reduce activity to minimize sweating
 5. Convection
 - a. Occurs when moving air or water removes body heat

- b. Heat loss increases as air or water speed increases
 - c. Speeds up process of cooling from other four heat loss mechanisms
 - d. To minimize, stay out of wind and water and wear windproof outer layer
6. Control heat loss by keeping high heat loss areas dry and protected with proper clothing



Overhead #3



Overhead #4

General Causes of Hypothermia (see Overhead #3)

- A. Poor judgment
- B. Exposure to wind, wet, and cold
- C. Improper clothing
- D. Contributing factors
 - 1. Age—very young or very old people may not have adequate heat regulating systems
 - 2. Body fat—people with less body fat cool faster than people with more body fat (see Overhead #4)
 - 3. Alcohol—dilates blood vessels (which speeds up heat loss), impairs judgment
 - 4. Other drug—can hasten heat loss
 - 5. Mental depression—can lower body temperature

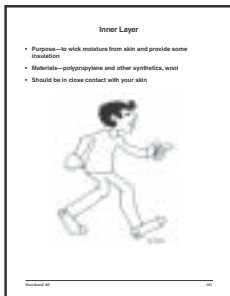
Preventing Hypothermia

- Use good judgment—know your limits, equipment, and environment
 - Eat nutritious foods and drink water regularly
 - Rest frequently
 - Reduce exposure to wind, wet, and cold—stay dry and warm!
 - Wear proper clothing—clothes are your primary shelter
- A. Body heat is retained by trapping air next to it
 - B. The more still air clothing holds and keeps warm, the better its insulating value
 - C. Proper clothing protects against wind, wet, and cold and protects high heat loss areas
 - D. Type of fabric and presence of water affect how well clothing insulates—some fabrics lose most of their insulating value when wet
 - 1. Wool
 - a. Provides good insulation when dry
 - b. When wet it loses some insulating ability
 - c. Traps water and is heavy when wet
 - d. Not readily flammable
 - 2. Polypropylene, “pile,” polyesters, Polartec, fleece, and other synthetics
 - a. Generally light weight and dry quickly
 - b. Provide good insulation
 - c. Some are engineered to wick water away from body, which helps prevent heat loss

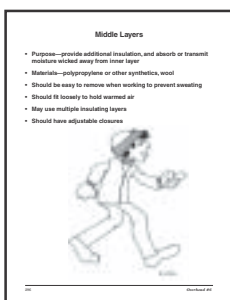
- d. Fibers don't readily absorb and hold water
 - e. Retain most of their insulating ability when wet
 - f. Most are not windproof unless specially designed
 - g. Some chemically treated to not hold body odor
 - h. Low ignition temperature so can get burn holes or melt onto skin if worn too close to heat
 - i. Products and properties vary widely; read manufacturer's information
3. Cotton
 - a. Rapidly absorbs and holds water—cotton sucks
 - b. Provides no insulation, feels clammy and cold when wet
 - c. Wet cotton increases heat loss
 - d. Poor fabric choice for wet climate outdoor activities
 4. Silk
 - a. Very thin
 - b. Loses insulating ability when wet
 5. Down
 - a. Provides no insulation when wet
 - b. Poor choice for wet climate outdoor activities
- E. Dark colors absorb more heat from external sources but are more difficult to see than bright or light colors

Wear Layered Clothing

- A. In general, multiple layers trap more air than a single-layer garment of same thickness
- B. Adjusting to environmental changes is easier when you layer your clothing
- C. Removing layers before overheating reduces sweating and subsequent heat loss
- D. Inner layer = underwear, long underwear, inner socks (see Overhead #5)
 1. Purpose—to wick moisture from skin and provide some insulation
 2. Materials—polypropylene and other synthetics, wool
 3. Should be snug, have close contact with skin
- E. Middle layers = shirts, pants, sweaters, vests, jackets, hats, thick socks, mittens or gloves (see Overhead #6)
 1. Purpose—provide additional insulation and absorb or transmit moisture wicked away from inner layer
 2. Materials—polypropylene and other synthetics, wool
 3. Should fit loosely to hold warmed air
 4. May use multiple insulating layers
 5. Should be easy to remove when working to prevent sweating
 6. Should have adjustable closures
 7. Hats
 - a. Reduce heat loss from highest heat loss area

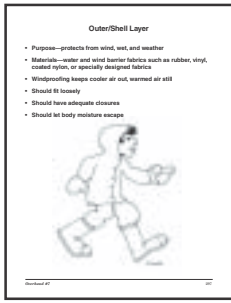


Overhead #5



Overhead #6

- b. Effective way to help keep your whole body warm—Cold feet? Put on a hat
 - c. Wool and synthetic hats are more effective than cotton baseball caps
 - d. Can be middle or outer layer, or combination
- F. Outer/shell layer = wind and waterproof shell, hooded jacket, rain gear, float coat, flotation coveralls, waterproof overmitts or gloves, and boots (see Overhead #7)



Overhead #7

1. Purpose—protects from wind, wet, and weather
2. Materials—water and wind barrier fabrics such as oilskins, rubber, coated nylon, specially treated fabrics
3. Windproofing increases efficiency of middle layers by keeping cooler air away from your skin and holding warmed air still
4. Should fit loosely
5. Should have adequate closures
6. Should let moisture escape
 - a. “Breathable” shells
 - (1) Allow wicked water to escape
 - (2) Keep out light but not heavy rain
 - (3) Dirt, oils from skin, wood smoke, salt water, and repeated washing reduces garment’s breathability
 - (4) In a dry sub-freezing environment, a breathable outer layer is critical. Moisture wicked away from body can freeze on inside of shell—even breathable ones
 - b. Shells that do not “breathe”
 - (1) Keep wicked water inside
 - (2) Offer good protection from heavy rain
7. Conditions and activity levels determine which type is best
8. When there is no wind, better to not wear shell and brush off frozen moisture from outermost middle layer
9. When wearing outer shell, carry extra clothes and change wet clothes as soon as activity ends
10. Down parkas combine insulation with a wind shell but offer no protection from rain, wet, or spray

Signs and Symptoms of Hypothermia

- Important to recognize hypothermia in order to treat it as soon as possible
 - Difficult to recognize in oneself—cooling affects brain’s ability to make good decisions
 - Signs and symptoms may not always be observed
- A. Rescuer may not be in a position to observe progressive signs and symptoms
- B. Progression may be rapid

Alcohol consumption makes things worse

- A. May mask hypothermia signs and symptoms
- B. May make some people not shiver despite being cold
- C. Speeds up hypothermia—an intoxicated person may also be hypothermic and in desperate need of treatment, especially in winter
- D. A hypothermic person may appear drunk and not get needed treatment
 - People may exhibit different signs and symptoms
 - Must determine from conditions and circumstances whether a person is likely to be hypothermic and if so, treat person
 - If left untreated, hypothermia will lead to death

Prehypothermia or cold stress/cold reaction

- A. Happens just from being in a cold environment
- B. Can lead to hypothermia if not corrected
- C. Occurs when your core temperature is normal
- D. Your body compensates for heat loss by
 - 1. Keeping blood in core—fingers and toes feel cold
 - 2. Generating heat through shivering
- E. You may urinate excessively as blood is shunted to core

Signs and symptoms of mild hypothermia: You are beginning to lose ability to compensate for heat loss

- A. Feel cold
- B. Shivering
 - 1. Can become uncontrollable
 - 2. Not a reliable sign
 - a. Alcohol intoxication and some medications may cause people not to shiver
 - b. Very old and very young may not shiver
 - c. People with metabolic disorders may not shiver
- C. Impaired judgment
 - 1. Can lead to lack of recognition or denial of problem
 - 2. Can lead to confusion
 - 3. Can lead to injury
- D. Increased urination

Signs and symptoms of severe hypothermia

- A. Feel cold
- B. Diminished shivering
- C. Depressed vital signs, such as slow pulse and/or slow breathing
- D. Altered level of consciousness
 - 1. Abnormal behavior
 - 2. “Umbles” = mumble, stumble, fumble
 - 3. Confusion, disorientation
 - 4. Easy to confuse with drunken behavior

- 5. Can lead to denial of problem
- 6. Can lead to injury
- E. Response to verbal or painful stimuli may be delayed or absent
- F. Muscle rigidity
- G. Loss of consciousness
- H. Heart irregularity

Hypothermia Treatment

Treat early

- A. When in doubt about severity, treat for severe hypothermia
- B. Easier to prevent and treat in earlier stages, especially in field

Basic treatment for all hypothermia patients

- A. Minimize movement and be as gentle as possible, especially with severely hypothermic victims
- B. Recover from water in a horizontal position if it doesn't delay rescue; this lessens risk of rapid fall in blood pressure and possible cardiac complications
- C. Prevent further heat loss
 - 1. Insulate from ground or surfaces cooler than victim
 - 2. Protect from wind
 - 3. Eliminate evaporative heat loss by removing wet clothing or covering victim with vapor barrier such as a plastic bag—do not cover airway
 - 4. Cover victim's head and neck—do not cover airway except with light fabric to reduce heat loss from breathing; monitor breathing while doing this
- D. Monitor victim and transport to a medical facility
- E. Never give alcohol—it increases heat loss by dilating blood vessels
- F. Do not leave unattended
- G. Monitor closely—victims are most vulnerable to heart problems during afterdrop

Children should

- A. Get adult help
- B. Prevent further heat loss by drying or covering victim, especially head
- C. Never use their own body heat to warm victim

Basic treatment for mildly hypothermic victims

- A. Use basic treatment for all hypothermia victims (see above)
- B. If there is no way to transport victim to a medical facility, gradually rewarm
 - 1. Place victim in a warm environment
 - 2. Increase heat production through
 - a. Exercise
 - b. Eating and fluid replacement—only if totally alert and can feed self
 - 3. Cautiously apply insulated heat packs to high heat loss areas—cold skin burns easily, even from objects that feel just warm to rescuer

4. Consider warm showers and warm bath only if victim is alert
5. Place victim in sleeping bag and provide contact with a warm body
 - a. Do not place in a sleeping bag with another hypothermic or cold person or a child
 - b. Use as a last resort
 - c. Less efficient than other methods
 - d. May endanger rescuer

Basic treatment for severely hypothermic victims with life signs

- A. Severely hypothermic victims may look dead—treat them anyway
- B. When there is no way to transport victim to medical facility, prevent further heat loss
- C. Follow basic treatment guidelines for mild hypothermia above with these additions
 1. Treat as gently as possible—a cold heart is prone to electrical problems and mishandling can result in further injury
 2. No showers or hot baths—cold blood from extremities rushes to body core
 3. No drinks of any kind
 4. Do not rub or massage victim
 5. Do not manipulate extremities or force joints to move
 6. All victims of severe hypothermia must get medical assistance for proper treatment and to prevent development of severe complications such as heart rhythm irregularities

Treatment for severe hypothermia without life signs

- A. Treat as above
- B. Check for pulse for up to 45 seconds
 1. If no pulse, start CPR
 2. Reassess victim's status periodically
- C. Transport to a medical facility as soon as possible
- D. Don't give up! A victim is not considered dead until warm and dead

Hypothermia: Activities Guide

- The activities in this volume are sequential, and each unit assumes knowledge of the material in the preceding unit.
- Activities are arranged by topic in the same order as the Teacher Information.
- Within a topic activities are organized from easiest to most difficult.
- Detailed Alaska Content Standards are located at the end of each activity’s procedures.
- Times needed for activities are approximate.
- Many activities contain true stories; be sensitive to the possibility that they could be written about your students’ relatives or friends.
- **AMSEA** This symbol means the equipment is available to borrow from AMSEA.

Topic: Hypothermia Definitions

Activity	Objectives	Standards
1. Hypothermia Word Scramble Unscramble words p. 22	<ul style="list-style-type: none"> • Define hypothermia by unscrambling words to form a sentence 	Language Arts Science
2. Hypothermia: What Is It? Use newspaper articles p. 24	<ul style="list-style-type: none"> • Define hypothermia by defining its morphemes • Identify the body’s core • Determine the “normal” temperature of the class 	Language Arts Mathematics Science Skills for a Healthy Life
3. Hypothermia Vocabulary Write sentences or a story p. 29	<ul style="list-style-type: none"> • Demonstrate proper pronunciation of vocabulary words • Use vocabulary correctly in sentences 	Language Arts Skills for a Healthy Life

Topic: Heat Gain vs. Heat Loss

Activity	Objectives	Standards
4. Hypothermia Science Experiment Use paper cups and meat thermometers p. 32	<ul style="list-style-type: none"> • Explain that water cools a body more rapidly than air of the same temperature 	Mathematics Science Skills for a Healthy Life

<p>5. Heat Gain Activities Exercise and application of external heat to high heat loss areas p. 34</p>	<ul style="list-style-type: none"> • Demonstrate that exercise generates heat • Identify the body’s five high heat loss areas • Demonstrate that an external heat source helps protect against heat loss 	<p>Science Skills for a Healthy Life</p>
<p>6. Food Metabolism Produces Heat Research p. 35</p>	<ul style="list-style-type: none"> • Recognize that food and water are essential to maintaining normal body temperature • List seven foods appropriate for a water adventure 	<p>Language Arts Mathematics Science History Skills for a Healthy Life World Languages Technology Library/Information Literacy</p>

Topic: Preventing Hypothermia

Activity	Objectives	Standards
<p>7. All Wet Use swatches of material on water p. 37</p>	<ul style="list-style-type: none"> • Identify cotton as a material that absorbs water quickly and does not insulate when wet • Identify wool and synthetic fleece as materials that don’t absorb water quickly and still insulate when wet • Compare the insulating qualities of various fabrics when wet 	<p>Science Skills for a Healthy Life</p>
<p>8. Hot Potatoes Science Experiment Use baked potatoes “dressed” with various fabrics p. 39</p>	<ul style="list-style-type: none"> • Explain that water cools a body more rapidly than air of the same temperature • Compare insulating qualities of four common fabrics when dry and when wet • Compare the effects of heat loss from conduction and radiation 	<p>Mathematics Science Geography Skills for a Healthy Life</p>

<p>9. Dressing to Prevent Hypothermia Science Experiment Use cups of water “dressed” with various fabrics p. 43</p>	<ul style="list-style-type: none"> • Explain that layering materials that insulate well is the most effective way to ward off hypothermia • Explain that wearing a hat slows down the cooling process • Define evaporation and convection as cooling processes • Explain why body heat is retained when you are dry and protected from the wind 	<p>Mathematics Science Skills for a Healthy Life</p>
<p>10. Hypothermia Letter Write a letter p. 58</p>	<ul style="list-style-type: none"> • Write a definition of hypothermia • Write an explanation of immersion hypothermia • Explain in writing how food and exercise help prevent hypothermia • Explain in writing the role of high heat loss areas in hypothermia 	<p>Language Arts Science Geography Skills for a Healthy Life</p>

Topics: Signs and Symptoms of Hypothermia, Hypothermia Treatment

Activity	Objectives	Standards
<p>11. Recognize and Treat Hypothermia Use video footage p. 61</p>	<ul style="list-style-type: none"> • List eight signs and symptoms of hypothermia • List four steps for treating hypothermia at all levels • List four actions to avoid when treating severe hypothermia • Demonstrate treatment • When given a list of different signs, demonstrate appropriate steps for treating a hypothermic person 	<p>Language Arts Science Geography Skills for a Healthy Life</p>

12. Hypothermia Stories Analyze news stories p. 66	<ul style="list-style-type: none"> • Apply knowledge of hypothermia signs, symptoms, and treatment to analyze case studies of environmental trauma • Apply knowledge of hypothermia to determine what went wrong in each case study and how the disaster might have been prevented 	Language Arts Science Geography Skills for a Healthy Life
13. Hypothermia Recognition and Treatment Game Use scenario cards p. 77	<ul style="list-style-type: none"> • Match five hypothermia scenario cards with appropriate treatment 	Language Arts Science Geography Skills for a Healthy Life

Topic: Summary/Review

Activity	Objectives	Standards
14. Wahoo! Use board game p. 81	<ul style="list-style-type: none"> • Define hypothermia • Describe the differences between dry and immersion hypothermia • Identify four general causes of hypothermia • List the five high heat loss areas • List four steps to help prevent hypothermia • List four signs and symptoms of hypothermia • List four hypothermia treatment steps 	Language Arts Science Skills for a Healthy Life
15. Hypothermia Anagrams Use anagram word puzzles p. 89	<ul style="list-style-type: none"> • List the five high heat loss areas • List the five ways your body loses heat • List four steps to help prevent hypothermia 	Language Arts Science Skills for a Healthy Life

16. Hypothermia Word Games

Use word search and
crossword puzzle
p. 92

- Define hypothermia
- List five ways your body loses heat
- List five high heat loss areas
- List three things that increase susceptibility to hypothermia
- List three signs and symptoms of mild hypothermia
- List four signs and symptoms of severe hypothermia
- List three steps for treating hypothermia at all levels and one additional step for treating severe hypothermia
- List four actions to avoid when treating severe hypothermia

Language Arts
Science
Skills for a Healthy Life

17. Origami Fact Catcher

Make a folded paper
“catcher”
p. 97

- Define hypothermia
- List the high heat loss areas
- List the body area that loses the most heat
- List three facts you can use to help prevent hypothermia
- List two steps to take when treating hypothermia

Language Arts
Mathematics
Science
Skills for a Healthy Life

Hypothermia Word Scramble

Time: 15 minutes

Overview

Unscramble words to make a definition of hypothermia.

Objective

After completing this activity, students should be able to define hypothermia by unscrambling words to form a sentence.

Materials

- One per group, hypothermia sentence cards (make from Template #1)

Procedure

Before Class

Make sets of hypothermia sentence cards by cutting the template into strips with one sentence on each strip. Then cut each sentence into nine pieces so that only one word is on a piece of paper or card.

During Class

1. Ask if anyone knows what hypothermia is, if anyone has ever felt cold, and if anyone has ever had hypothermia.
2. Divide the class into small groups or pairs. Distribute a set of sentence word cards face down to each group. When you say, “Go!” students look at the word cards and arrange them to make the correct sentence.
3. When groups think they have the words in the correct sequence, they raise their hands ever so quietly. When all are finished, ask

students what clues helped them to figure out the correct order (capital letter in the beginning, period at the end, main topic/subject of sentence, etc.)

4. Break up the word into morphemes, explaining that “hypo” means below and “thermia” refers to temperature. Ask for other words that begin with “hypo” such as hypodermic, hypoglycemia, hypoallergenic, and words with “therm” such as thermometer, thermal underwear, thermos. Review the meaning of hypothermia.

Variation

Translate the sentence to the local Native language and repeat the exercise.

This activity addresses Alaska Content Standards:

Language Arts A-1 Effective writing, A-2 Writing conventions, B-1 Meaning from written text

Science D-1 Practical applications of scientific knowledge, A-4 Observable natural events

Hypothermia Word Scramble

Hypothermia is a drop in the body's core temperature.

Hypothermia is a drop in the body's core temperature.

Hypothermia is a drop in the body's core temperature.

Hypothermia is a drop in the body's core temperature.

Hypothermia is a drop in the body's core temperature.

Hypothermia is a drop in the body's core temperature.

Hypothermia is a drop in the body's core temperature.

Hypothermia is a drop in the body's core temperature.

Hypothermia: What Is It?

Time: 60 minutes

Overview

Use newspaper articles to define hypothermia; identify body core; take students' temperatures.

Objectives

After completing this activity, students should be able to:

1. Define hypothermia by defining its morphemes.
2. Identify the body's core.
3. Determine the "normal" temperature of the class.

Materials

- One per student, dictionary
- One per student, Student Handouts #1 **Hypothermia**, #2 **Your Body's Core**, and #3 **Canadian Kayaker Whistles for Help**
- One per group, Student Handout #4 **What Is Normal Temperature?**
- One per group, thermometer for taking body temperature
- Clock with second hand

Procedure

1. Explain to students that they are going to define hypothermia, identify the body's core, and figure out the class's normal temperature.
2. Distribute and have students complete Student Handout #1.
3. Define hypothermia for the class.
4. Identify where the body's core is.
5. Distribute and have students complete Student Handout #2.
6. Have students read Student Handout #3.
Discussion points:
 - What was the weather like when Reinhart Kelbert fell out of his kayak?
 - How long was he in the water?
 - The story says he was in an advanced stage of hypothermia. What was his core temperature?
7. Explain that you will be determining what the class's "normal" temperature is. Remind them that Reinhart Kelbert's temperature was 92.1 °F.
8. Distribute Student Handout #4. Students take their own temperatures and record on the handout.
9. Compare the class's results with 98.6 °F, the official "normal." Discuss why it might be different.
10. Discuss what it might feel like to have a temperature as low as Mr. Kelbert's.

This activity addresses Alaska Content Standards:

Language Arts B-1 Meaning from written, oral, and visual text, B-2 Investigations in written material, B-3 Relate to practical purposes, D-1-D Analyzing information, D-2 Evaluating information

Mathematics A-3 Arithmetic and computation, E-2 Mathematics in daily life

Science A-14 Living things and their environments, D-1, 3 Practical applications of scientific knowledge, D-6 Scientific discovery

Skills for a Healthy Life A-1 Personal well-being, A-3 Injury prevention, D-2

Name: _____ Date: _____

Hypothermia

1. Hypothermia consists of two word parts called morphemes. Morphemes have meaning just as words do, but they can't be words by themselves.

Write the two morphemes found in hypothermia

2. The first morpheme is _____. Find words in the dictionary that begin with this morpheme and complete the table below.

Word: _____

Definition: _____

What these words have in common: _____

3. The second morpheme is _____. Find words in the dictionary that begin with this morpheme and complete the table below.

Word: _____

Definition: _____

What these words have in common: _____

4. Based on the above information, write a definition for hypothermia.

Name: _____ Date: _____

Your Body's Core

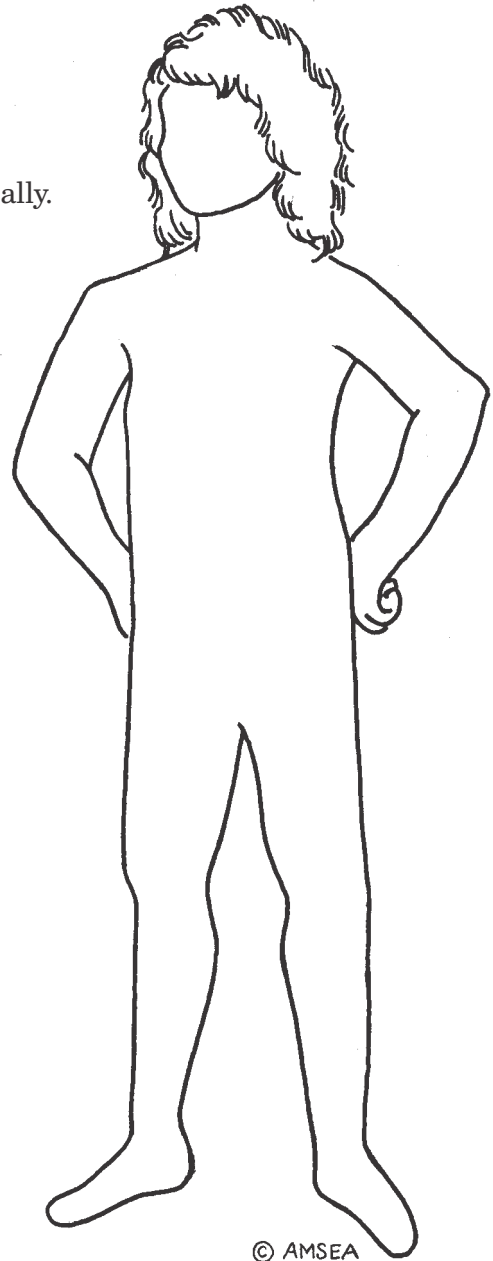
Your body's core is inside your head and trunk. Organs that keep you alive are located in those places. What organs are those?

1. _____
2. _____
3. _____

These organs must stay warm if your body is to work normally.

Color in the core on the figure to the right.

When the temperature in your core begins to drop, you are developing hypothermia.



Canadian Kayaker Whistles for Help

Burlington, Ontario, Canada

*Submitted by Fox 40 Whistles.
Reprinted from Saved by the Jacket.*

A personal flotation device is a boater's best defense against drowning. However, as a Canadian kayaker will attest, if takes a loud whistle to let rescuers know where you are!

"He heard my whistle long before he saw me. Even though my kayak is bright yellow and 17 feet long, no one could see it because of the waves," said grateful survivor Reinhart Kelbert.

What started out as a routine February paddle on a British Columbia bay, turned out to be a near-death experience for a Canadian kayaker. After 45 minutes of paddling through gusting winds, Pacific Ocean tidal currents, freezing temperatures and three-foot waves, Reinhart Kelbert's sea kayak capsized.

Mr. Kelbert is an expert kayaker and was outfitted to handle any emergency. He was wearing a wet suit and a lifejacket, and he carried a self-rescue paddle float, a safety whistle and flares. Despite all his precautions, Mr. Kelbert is still lucky to be alive.

Reinhart Kelbert was unable to get back into his kayak and out of the frigid ocean waters. Hanging onto his kayak, he found himself drifting parallel to the shore rather than straight in. Estimating that it would take at least two hours to drift to a distant point of land, he knew that if he didn't get help soon he would succumb to hypothermia.

Kelbert's flares were out of reach inside the upside-down kayak. However, he did have a loud waterproof safety whistle attached to the shoulder of his PFD. As luck would have it, a windsurfer came into sight. Although he was a long way off, the windsurfer was in the general direction he was drifting.

With seas obstructing both him and his kayak from view, it was the penetrating sound of his whistle that summoned windsurfer Alex Wharton. Mr. Wharton righted the kayak, recovered the flares and summoned the U.S. Coast Guard. Now in an advanced stage of hypothermia, Mr. Kelbert was pulled out of the water, taken onto the rescue vessel and wrapped in blankets and heat packs. After being in the water for about an hour, his core temperature was measured at 92.1 °F.

"Without my PFD and whistle I wouldn't have made it. The PFD kept me afloat. The whistle? Without it I could have easily drifted right past my would-be rescuer," said Reinhart Kelbert.

Name: _____ Date: _____

What Is Normal Temperature?

1. Take everyone's temperature and write it down below.
 - Axillary temperature should be taken for hygiene reasons. It tends to be 1° to 2° F lower than oral temperature.
 - If using a glass thermometer, shake it down below 96° F and have a watch or clock nearby to time the reading. Insert the thermometer under armpit next to skin, cross arm against chest, and hold thermometer in place for 4 to 5 minutes before reading.
 - If using a digital thermometer, read directions to know when the thermometer is finished reading. Turn it on and clear the screen of any earlier reading and take temperature.
2. Add all the temperatures together.
3. Count the number of people who had their temperatures taken.
4. Divide the total of the temperatures by the number of people to get the "normal" temperature for the class.

Name

Temperature

Total Number of People

Total Degrees

Total Degrees ÷ Total # People

Average (Normal):

Hypothermia Vocabulary

Time: 45 minutes

Overview

Write sentences or a story using hypothermia terms.

Objectives

After completing this activity, students should be able to:

1. Demonstrate proper pronunciation of vocabulary words.
2. Use vocabulary correctly in sentences.

Materials

- One per student, Student Handouts #1 **Hypothermia Vocabulary Words** and #2 **A Chilly Sunday This Fisherman Will Never Forget**

Procedure

1. Explain to students that they will be learning about words related to hypothermia.
2. Distribute Student Handout #1. Have volunteers read a word and its definition aloud until all words have been read.
3. Read Student Handout #2. Discuss the story introducing the vocabulary words from Student Handout #1.
4. Have students complete Student Handout #1.
5. Break the class into groups of four. Within each group assign a number between 1 and 10 to every student.
6. To begin the game, call out a number and the people with that number read aloud their sentence of the same number to their

group. Students within each group listen to their reader and discuss the word's meaning if the sentence raises any questions. When the readers have finished, they call out another number that hasn't been called and the person in their group with that number reads aloud their sentence of the same number. Continue to play until all words have been read in a sentence.

Extensions

1. Students write about a personal experience, or the story you read, using as many words from the vocabulary list as they can. Assign points for each word used correctly.
2. Students make up a song using as many words from the list as they can.

This activity addresses Alaska Content Standards:

Language Arts A-1 Effective writing, A-3 Demonstrate speaking skills, B-1 Meaning from written and oral text

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention

This activity is a variation of one submitted by Petersburg, Alaska, Public School teacher Shannon Vendervest.

Name: _____ Date: _____

Hypothermia Vocabulary Words

1. Below is a list of vocabulary words and their definitions.

Cold water: Water 91°F or lower (being in water this cold can lead to hypothermia).

Dry hypothermia: Hypothermia that occurs when a person is in a dry, cool or cold environment; occurs slowly.

High heat loss areas: Five areas of the body where heat escapes most easily. They are the head, neck, underarms, sides of the chest, and groin.

Hypothermia: Cooling of the body's core.

Immersion: To be submerged or in the water.

Immersion hypothermia: Hypothermia that occurs when a person is immersed in cold water; occurs quickly.

Layering: An effective way of dressing in cold environments that includes wearing an inner layer (clothing that is next to the skin) covered by one or more insulating layers (clothing that provides warmth), covered by an outer/shell layer (clothing that protects against the wind, snow, wet, and rain).

Signs: Things we can notice that show us a person has a problem.

Symptoms: What a person senses when they have a problem.

Treatment: The steps taken to care for a person who has a medical problem.

2. Write one sentence for each vocabulary word, using the words correctly.

A Chilly Sunday This Fisherman Will Never Forget!

Mississippi River, Red Wing, Minnesota

Adapted from a story by Jeff Brown, "Red Wing/Republican Eagle," reprinted in Saved by the Jacket.

It was a chilly Sunday that Mike Moldenhauer will never forget. It was January 18, 1987, and Mr. Moldenhauer had spent the morning attending a funeral; in the afternoon he was floating in the Mississippi River contemplating his own!

The 27-year-old Hager City, Minnesota, man had planned to boat up the Mississippi River and meet several of his friends near the Red Wing Dam for an afternoon of fishing. With the temperature hovering at the freezing mark, Mr. Moldenhauer wanted to make his four-mile boat trip a quick one, but a submerged ice chunk put a chill on that plan!

Mike Moldenhauer was alone in his 16-foot flat-bottom boat with a 50-horsepower motor pushing him along at a fast pace. He had pulled into the center of the river when he suddenly found himself in danger.

"I was near the end of an island when I heard this thud," the fisherman said. "I remember the motor handle going out of my hand. The last thing I remember was the boat tipping sideways. I tumbled and did a forward somersault out of the boat." Within seconds Mr. Moldenhauer was bobbing in the icy water as his boat, with the throttle stuck at half power, circled around him—tantalizingly close but out of reach! To make matters worse, Mr. Moldenhauer couldn't see.

"It was all black," he said. "I had a face mask on, and it had shifted to the side. I couldn't tell what was sideways or what was up or down."

Luckily the victim kept calm. He was wearing two pairs of overalls and a life jacket. He took off his gloves, untangled his face mask and adjusted his glasses, making ready to swim to shore just 75 yards away. With no one in sight Mr. Moldenhauer started swimming towards the shore. The instant he tried to kick his legs, however, another problem occurred.

He said, "I was floating straight up and down. I couldn't move my legs."

Mike Moldenhauer used his arms and swam hard against the current. While he inched closer to shore, he began to feel the effects of hypothermia. He started losing feeling in legs, hands and face! Fortunately, he did reach land and literally crawled up the riverbank.

Within minutes help was on its way. A neighbor on hearing the sound of the boat hitting ice, grabbed blankets, jumped into his canoe and set out to help! Mike Moldenhauer was soon reunited with his boat and quickly taken home.

"Without my life jacket I would have drowned," explained Mike Moldenhauer. "I'm not very religious, but there was somebody looking over me. I can joke about it now, but just thinking you should have died makes you think. Somebody was saying you better slow down a little!"

Hypothermia Science Experiment

Time: 15-20 minutes

Overview

Use paper cups and meat thermometers to discover how bodies lose heat.

Objective

After completing this activity, students should be able to explain that water cools a body more rapidly than air of the same temperature.

Materials

- Two 8 oz. paper cups with aluminum foil lids
- Two meat thermometers
- One 2-pound coffee can partially filled with room-temperature water
- Hot water
- Clock with a second hand
- One per student, Student Handout #1 **Which Cools Faster?**
- Overhead #2 **Heat Gain vs. Heat Loss**

Procedure

1. Explain to students that they will be comparing how cups of water cool in air and in a pan of water.
2. Distribute Student Handout #1 and have students complete question 1.
3. Fill two paper cups within one inch of their tops with hot water. Be sure to pour equal amounts into each.
4. Cover the tops with aluminum foil, put a thermometer through the aluminum foil in each, and have students record the beginning temperature on the handout.
5. Place one cup in the coffee can so the water in the can is just below the top of the cup. Leave the other cup on the table.
6. Have students record the temperature of water in each cup after 30 seconds, 1, 2, 3, 4, and 5 minutes. Compute the temperature drop.
7. Have students complete the rest of Student Handout #1.
8. Explain that the two cups are like people in that both have warm bodies; but we generate heat while the cup of hot water does not. How would that affect the cooling process? Will hypothermia occur faster in water or in air? Show Overhead #2.

Extension

Repeat the experiment using cold water instead of air-temperature water and discuss how quickly things cool in cold water.

This activity addresses Alaska Content Standards:

Mathematics A-2 Measurement, A-3 Arithmetic and computation, D-2 Drawing logical conclusions

Science B-1 Scientific processes, C-2 Knowledge through experimentation, D-6 Using reasoned decisions

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed choices, B-1 Risk and consequences, D-1 Responsible decisions

Name: _____ Date: _____

Which Cools Faster?

1. Given two cups of hot water, which do you think will cool the fastest, the one sitting in water or the one on the table?
2. Record the temperatures below.

Cup on table _____

Cup in water _____

Beginning temperature _____

After 30 seconds _____

After 1 minute _____

After 2 minutes _____

After 3 minutes _____

After 4 minutes _____

After 5 minutes _____

Temperature drop _____

3. Which cup of water cooled the most rapidly? Why?

Heat Gain Activities

Time: 15 minutes

Overview

Discover how bodies gain heat by exercise and application of external heat to high heat loss areas.

Objectives

After completing this activity, students should be able to:

1. Demonstrate that exercise generates heat.
2. Identify the body's five high heat loss areas.

3. Demonstrate that an external heat source helps protect against heat loss.

Materials

Part 1

- Overhead #2 **Heat Gain vs. Heat Loss**

Part 2

- Overhead #1 **Five High Heat Loss Areas**
- One per student, hot object such as baked potatoes, chemical heat packs, hot water bottles, double plastic Ziploc™ bags filled with hot water

Procedure

Part 1

1. Explain to students that they will be conducting an experiment to determine how warm they feel before and after exercise.
2. Have students run in place or do some other activity that generates heat for 3 to 5 minutes.
3. Ask students to compare how warm they feel now with how they felt before exercise. (Exercise is one way your body generates heat.) Ask students, "What do you need to do to sustain exercise?" (Consume food and water for energy.)
4. Show Overhead #2.

Part 2

1. Explain to students that they will be conducting an experiment to determine how adding heat to their bodies makes them feel warmer.
2. Show Overhead #1 and have students locate their five high heat loss areas.

3. Distribute hot objects and direct students to place them on one of these high heat loss areas: under their arms (in their armpits), on their necks, on top of their heads, or against the sides of their chests. Objects may need to be wrapped to prevent burns. Direct students to leave them there for 1 minute.
4. After all students have removed their hot objects, discuss what changes in warmth they felt.
5. Discuss whether there was a noticeable difference in body warmth when a hot object was held in the hands as opposed to being placed on a high heat loss area. (The most efficient heat gain is through high heat loss areas.)
6. Emphasize that protecting these high heat loss areas from wet, wind, and cold is a crucial step in preventing hypothermia.

These activities address Alaska Content Standards:

Science C-2 Knowledge through experimentation, D-1, 3 Practical applications of scientific knowledge

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed decisions

Food Metabolism Produces Heat

Time: Three 60 minute periods

Overview

Research the role of food in hypothermia.

Objectives

After completing this activity, students should be able to:

1. Recognize that food and water are essential to maintaining normal body temperature.
2. List at least seven foods appropriate for an on-the-water adventure.

Materials

- Internet or library access
- Interviews with elders or cold environment nutrition experts
- *Cold, Wet, and Alive* video (21 minutes)



Procedure

1. Explain that students will be researching the role of food in hypothermia.
2. Introduce the following concepts:
 - Bodies must generate heat in order to maintain a temperature of 98.6°F
 - Not all heat comes from external sources (the sun, fires, heated spaces)
3. Watch *Cold, Wet, and Alive* video and discuss the balance between food, exertion, and body core temperature.
4. Have students define “calorie.” Discuss its meaning.
5. Assign students to research one of the following:
 - Traditional diets in the Arctic and compare them with the diet needed for attending school, going to the movies, or going to a dance
 - Traditional foods taken on hunting trips and how those compare with foods that are taken now
 - Foods packed for Shackleton’s Antarctic expedition and the foods the crew ate when they became stranded. Compare these to the diet we eat in everyday life.
 - Foods packed for a circumnavigation sail of the world or a Pacific Ocean crossing by sailboat. Compare that diet with the food eaten by us in everyday life.
 - Another idea of yours or theirs.
6. For each topic students must:
 - Write a summary of his/her research findings, including a list of the foods discovered and their importance
 - Using the research, create a food list for a boat trip

This activity addresses Alaska Content Standards:

Language Arts A-7 Using electronic communications, B-1 Meaning from written and visual text, B-2 Investigations in written materials, D-1-C Identifying information sources, D-1-D Analyzing information, D-2 Evaluating information

Mathematics A-2 Measurement and estimation, A-3 Arithmetic and estimation, E-2 Use mathematics in daily life

Science D-1, 3 Practical applications of scientific knowledge, D-6 Using reasoned decisions

History C-1 Use technology to access, retrieve, organize, and present historical information, C-2 Use historical data from a variety of primary sources

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed decisions, B-5 Evaluating information, D-1 Responsible decisions, D-2 Safe and healthy environments

World Languages B-2 Surface characteristics of the culture

Technology A-2 Communicating through technology, E-7 Technology in daily living

Library/Information Literacy A-4 Search for information and resources, A-5 Identify and use search strategies, B-2 Consider and determine useful resources, B-3 Access information, B-5 Organize and use information to create a product

Cultural Standards D-1 Interaction with elders

All Wet

Time: Minimum of 70 minutes

Overview

Use swatches of material in water to observe which get wet most rapidly and to feel how well they insulate when wet.

Objectives

After completing this activity, students should be able to:

1. Identify cotton as a material that absorbs water quickly and does not insulate when wet.

2. Identify wool and synthetic fleece as materials that don't absorb water quickly and still insulate when wet.
3. Compare the insulating qualities of various fabrics when wet.

Materials

- Pan with at least 1 inch of water in it, big enough to hold the tested fabrics
- Pieces of jeans, wool, synthetic fleece, or any other fabric you want to test, or socks of various materials
- One per student, Student Handout #1 **You're All Wet**

Procedure

1. Explain to students that they will be comparing various fabrics to see how much water they absorb and how well they insulate when wet.
2. Distribute Student Handout #1. Identify each fabric and have students complete numbers 1 and 2 on the handout.
3. Lay part of each fabric or sock on the water, draping the rest over the edge of the pan. Do not push them under water yet.
4. Have students record observations after 3 minutes
5. Push under water the parts that were on the water and leave them there for at least 45 minutes.
6. Have students complete the handout after the fabrics or socks have been under water for at least 45 minutes.
7. Discuss their answers as well as variables that can affect the results of this experiment (newness of the fabric, how many times it has been washed, how dirty it is, etc.).

Variation

Place several pans of water around the room and have small groups conduct the experiment independently.

This activity addresses Alaska Content Standards:

Science A-4 Observable natural events, A-5 Forces of nature, A-14 Living things and their environments, B-1 Scientific processes, C-2 Knowledge through experimentation, D-1, 3 Practical applications of scientific knowledge, D-6 Using reasoned decisions

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed decisions, B-1 Risk and consequences, D-2 Safe and healthy environments

Name: _____ Date: _____

You're All Wet

1. Identify each fabric and list it on the chart.
2. Predict the following:
 - a. Which fabric do you think will absorb the most water after lying on water for 3 minutes?
 - b. Which do you think will absorb the least water in 3 minutes?
 - c. After being under water for 45 minutes, which do you think will have absorbed the most water?
 - d. Which do you think will have absorbed the least water after being under water 45 minutes?
3. Lay part of each fabric/sock on the water, draping the rest over the pan's edge.
4. Record your observations after 3 minutes.
5. Push under water the parts that were on the water and leave them there for 45 minutes. (Some fabrics may not stay under water.)
6. Record your observations after 45 minutes.

Fabric _____

Observations after 3 minutes _____

Observations after 45 minutes _____
7. Get all the fabrics/socks totally wet, then wring out as much water as possible. Drape them over your bare arm or neck.
 - a. Are all pieces equally wet?
 - b. Which feels driest against your skin?
 - c. Which feels warmest against your skin?
8. Which fabric would be the worst to wear in a wet, cold environment?
9. Which fabric would be the best to wear in a wet, cold environment?

Hot Potatoes Science Experiment

Time: 90 minutes

Overview

Use baked potatoes to compare heat loss via air and water using various forms of insulation.

Objectives

After completing this activity, students should be able to:

1. Explain that water cools a body more rapidly than air of the same temperature.
2. Compare insulating qualities of four common fabrics when wet and when dry.
3. Compare the effects of heat loss from conduction and radiation.

Materials

- Overhead #1 **Five High Heat Loss Areas**
- One per student, Student Handout #1 **Hot Potatoes**

- 10 baked potatoes of about the same size (plus enough extra so everyone gets to eat one!) and a way to keep them hot
- 11 meat thermometers **AMSEA**
- Air thermometer
- Two wool socks
- Two cotton socks
- Two fleece, polypropylene, or other synthetic socks
- Pan of room temperature water (water level must be low enough so water doesn't contact thermometer shafts directly)

Extension

- Two pieces of traditional material or other fabrics worn by local people, and method of fastening them around potato

Procedure

Before Class

1. Label the socks by fabric type so they will be easy for students to identify.

During Class

1. Explain to students that they will be using baked potatoes to simulate a person and will be comparing how well a variety of fabrics insulate when both dry and wet.
2. Distribute Student Handout #1 and identify the different fabrics. Have students record the fabrics on the handout.
3. Review the five principles of heat loss. Show Overhead #1.
4. Ask students to predict which potato will be warmest and which will be coolest after 10 minutes. They record their predictions on the handout.
5. Put one thermometer in the bowl of water so you can easily read the temperature.
6. Students record the air and water temperature on the handout.
7. Dress eight hot potatoes in socks. Keep two potatoes as the control group. Don't dress them, but treat them the same as the dressed ones.
8. Insert a meat thermometer in each potato (through the sock for the dressed ones) and record each potato's temperature.
9. Arrange one of each potato pair in the water so the thermometer shaft does not come into direct contact with the water. Leave the other five potatoes dry.
10. Record the temperature of each potato, the water, and the air every 2 minutes for 10 minutes.
11. Have students answer the six observation questions on the handout.

12. Lead students through a discussion of their answers, emphasizing the advantages of staying dry and wearing proper clothing.
13. Optional—Have students graph changes of individual potatoes or use colors to put all the temperatures on a line graph.
14. Make a chart on the board to rate the insulating qualities of each sock, both dry and wet.
15. Eat the potatoes!

Extensions

1. Experiment with other materials traditional to your area or commonly used by local people.
2. Pairs of students prepare and monitor one potato and share result at the end of the experiment.
3. Students write a report, including their procedure, prediction, results, and conclusions.

This activity addresses Alaska Content Standards:

Mathematics A-2 Measurement, A-6 Statistics and data analysis, B-3 Using mathematics in real-life situations, E-1 Exploring problems using mathematics, E-3 Mathematics across the curriculum

Science A-4 Observable natural events, A-5 Forces of nature, A-14 Living things and their environments, A-15 Using local knowledge, B-1 Scientific processes, B-2 Tools of scientific investigation, B-5 Ethical standards, C-5 Collaboration, D-1 Practical applications of science, D-2 Effects of scientific innovations

Geography C-3 Regional environments, E-6 Physical hazards

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed choices, B-1 Risk and consequences, D-1 Responsible decisions, D-2 Safe and healthy environments, D-5 Effects of attitudes and behavior

Name: _____

Date: _____

Hot Potatoes

1. Mark your prediction for which potato will be the warmest and which potato will be the coolest after 10 minutes.

Potato	Warmest	Coolest
Dry wool		
Dry fleece		
Dry cotton		
Dry polypropylene		
Dry other (extension)		
Dry naked		
Wet wool		
Wet fleece		
Wet cotton		
Wet polypropylene		
Wet other (extension)		
Wet naked		

2. Record data.

Temp./Time [Record on Diagonal]	Dry Wool	Dry Fleece	Dry Cotton	Dry Polypropylene	Dry Other (extension)	Dry Naked	Air Temp.
Beginning							
After 2 min.							
After 4 min.							
After 6 min.							
After 8 min.							
After 10 min.							

Temp./Time [Record on Diagonal]	Wet Wool	Wet Fleece	Wet Cotton	Wet Polypropylene	Wet Other (extension)	Wet Naked	Water Temp.
Beginning							
After 2 min.							
After 4 min.							
After 6 min.							
After 8 min.							
After 10 min.							

Observations after 10 minutes:

High and Dry

1. Which dry potato was warmest?
2. Which dry potato was coolest?
3. What was the temperature difference between the warmest and coolest dry potato?

Socked and Soaked

4. Which wet potato was warmest?
5. Which wet potato was coolest?
6. What is the temperature difference between the warmest and coolest wet potato?
7. "Water cools a body 25 times faster than air of the same temperature."

Is this statement defended by the data you just collected? Explain your answer.

8. Describe the variables that could affect the outcome of this experiment.
9. Based on your data, which fabric(s) would help prevent hypothermia by offering the greatest insulation when wet and when dry?
10. Of the five principles of heat loss, which were observed in action here? Explain.

Dressing to Prevent Hypothermia Science Experiments

Time: 90-120 minutes

Overview

Use cups, hot water, and “clothes” to experiment with the insulating qualities of materials and the effect of wearing hats and layering clothes.

Objectives

After completing this activity, students should be able to:

1. Explain that layering materials that insulate well is the most effective way to ward off hypothermia.
2. Explain that wearing a hat slows down the cooling process.
3. Define evaporation as a cooling process.
4. Define convection as a cooling process.
5. Explain why body heat is retained best when you are dry and protected from the wind.

Materials

- Paper cups
- Hot water

- Large flat pan half full of ice water
 - One per cup, thermometer **AMSEA**
 - Material for “dressing” the cups: denim or other cotton (denim will make the point nicely about blue jeans), wool, synthetic fleece, polypropylene or other synthetic “pile” fabric, and rain gear.
 - Waterproof tape, rubber bands, or some means to hold the material in place
 - Clock with a second hand
 - Fan
 - Six per student, Student Handout #1
- ### Hypothesis
- One per student, Student Handouts #2 **Dry Clothes**, #3 **Dry Clothes and Hats**, #4 **Wet Clothes in the Water**, #5 **Wet Clothes and Hats in the Water**, #6 **Wet and Dry Clothes in the Wind**, and #7 **Wet and Dry Clothes and Hats in the Wind**
 - Overheads #5 **Inner Layer**, #6 **Middle Layers**, and #7 **Outer/Shell Layer**
 - Graph paper

Procedure

1. Explain to students that they will be using cups of hot water to simulate a person and will be examining how well different fabrics insulate in different conditions, and how well they work together in layers.
2. Distribute Student Handouts. Identify the different types of fabric on Student Handouts #2 through #8. If not using all types of fabric, have students cross out the fabrics they won't be using on each of the handouts. Have students label the fabrics so they will be easy to identify.
3. Explain to students that they will complete Student Handout #1 for each experiment.
4. Review with students the need for all cups to be filled to the same level with hot water, and to be wrapped in the same manner.
5. Conduct each of the experiments in order.
6. Students graph the results of each experiment and use graphs as the basis for discussing the results.
7. Discussion points, using Overheads #5 through #7:
 - Ways that the cups are like human bodies and ways they aren't. Explore how these differences might affect use of this data for people.

- Layering, wearing a hat, and staying dry and out of the wind are effective ways to slow down the cooling process.
- How convection, evaporation, and conduction each relate to the experiment.

Variation

Divide class into six groups, have each group conduct one experiment and share the results.

Extensions

1. Use animal fur or other materials traditionally used in your area and compare with modern fabrics.
2. Mix hats and materials in different ways.
3. Take and record readings for longer periods of time.

This activity addresses Alaska Content Standards:

Mathematics A-2 Measurement, A-3 Arithmetic and computation, D-1 Analyzing situations, D-2 Drawing logical conclusions, E-2 Mathematics in daily life, E-3 Mathematics across the curriculum

Science B-1 Scientific processes, C-2 Knowledge through experimentation, D-1, 3

Practical applications of scientific knowledge, D-6 Using reasoned decisions

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed decisions, B-1 Risk and consequences, B-5 Evaluating information, D-1 Responsible decisions, D-2 Safe and healthy environments

Name: _____ Date: _____

Hypothesis

For each experiment, study the instructions and “clothing” for the paper cups. Make the five predictions listed below before you begin the experiment.

Experiment: _____

Prediction	Hypothesis (Why?)
Which outfit will be the best insulator?	
Which outfit will be the second best insulator?	
Which outfit will be the third best insulator?	
Which outfit will be the next to the poorest insulator?	
Which outfit will be the poorest insulator?	

Name: _____ Date: _____

Dry Clothes

1. Be sure to complete Student Handout #1 before starting this experiment.
2. Dress each cup with the following dry “clothes.” Do not cover the top of the cups; they will get “hats” in the next experiment. Leave one cup naked.

Fill each cup to the same level with hot water and place a thermometer in each cup. As soon as the temperature reaches its maximum, record the reading in the first column.

Wait 2 minutes to take your second reading, and record it in the second column.

Wait 2 more minutes each to take your third and fourth readings, and record them in the appropriate columns.

After all recordings are complete, calculate the overall temperature change for each fabric or combination of fabrics.

Fabric	First	Second	Third	Fourth	Overall Temperature Change
Jeans					
Wool					
Synthetic fleece					
Polypropylene					
Rain gear					
Other (extension)					
Jeans & rain gear					
Wool & rain gear					
Synthetic fleece & rain gear					
Other & rain gear (extension)					
Naked					

3. Which fabric or fabric combination was the best insulator?

4. Which fabric or fabric combination was the poorest insulator?

5. Were your predictions correct? If not, what made the results different?

6. What fabric(s) would you want to wear if you were going on a boat or other activity near the water? Why?

Name: _____ Date: _____

Dry Clothes and Hats

1. Be sure to complete Student Handout #1 before starting this experiment.
2. Dress each cup with the following dry “clothes” and “hat.” Leave one cup naked. Fill each cup to the same level with hot water and place a thermometer in each cup. As soon as the temperature reaches its maximum, record the reading in the first column.

Wait 2 minutes to take your second reading, and record it in the second column.

Wait 2 more minutes each to take your third and fourth readings and record them in the appropriate columns.

After all recordings are complete, calculate the overall temperature change for each fabric or combination of fabrics.

Fabric	First	Second	Third	Fourth	Overall Temperature Change
Jeans					
Wool					
Synthetic fleece					
Polypropylene					
Rain gear					
Other (extension)					
Jeans & rain gear					
Wool & rain gear					
Synthetic fleece & rain gear					
Other & rain gear (extension)					
Naked					

3. Which fabric or fabric combination was the best insulator?

4. Which fabric or fabric combination was the poorest insulator?

5. Were your predictions correct? If not, what made the results different?

6. What fabric(s) would you want to wear if you were going on a boat or other activity near the water? Why?

7. Did the hats make a difference compared to the experiment in Student Handout #2? If so, what was the difference?

Name: _____ Date: _____

Wet Clothes in the Water

1. Be sure to complete Student Handout #1 before starting this experiment.
2. Dress each cup with the following wet “clothes.” Do not cover the top of the cups; they will get “hats” in the next experiment. Leave one cup naked. Fill each cup to the same level with hot water and place a thermometer in each. Place cups equally spaced in ice water. As soon as the cups are in the ice water, record the temperature of the water in the cups in the first column.

Wait 2 minutes to take your second reading and record it in the second column.

Wait 2 more minutes each to take your third and fourth readings and record them in the appropriate columns. Then calculate the overall temperature change for each.

Fabric	First	Second	Third	Fourth	Overall Temperature Change
Wet jeans					
Wet wool					
Wet synthetic fleece					
Wet polypropylene					
Wet rain gear					
Wet other (extension)					
Wet jeans & rain gear					
Wet wool & rain gear					
Wet synthetic fleece & rain gear					
Wet other & rain gear (extension)					
Naked					

3. Which fabric or fabric combination was the best insulator?

4. Which fabric or fabric combination was the poorest insulator?

5. Were your predictions correct? If not, what made the results different?

6. What fabric or fabric combination would you want to be wearing if you had to spend some time in the water? Why?

Name: _____ Date: _____

Wet Clothes and Hats in the Water

1. Be sure to complete Student Handout #1 before starting this experiment.
2. Dress each cup with the following wet “clothes” and “hats.” Leave one cup naked. Fill each cup to the same level with hot water and place a thermometer in each.

Place cups equally spaced in ice water. As soon as the cups are in the ice water, record the temperature in the first column.

Wait 2 minutes to take second reading and record it in the second column.

Wait 2 more minutes each to take third and fourth readings and record them in the appropriate columns. Then calculate the overall temperature change for each.

Fabric	First	Second	Third	Fourth	Overall Temperature Change
Wet jeans					
Wet wool					
Wet synthetic fleece					
Wet polypropylene					
Wet rain gear					
Wet other (extension)					
Wet jeans & rain gear					
Wet wool & rain gear					
Wet synthetic fleece & rain gear					
Wet other & rain gear (extension)					
Naked					

3. Which fabric or fabric combination was the best insulator?
4. Which fabric or fabric combination was the poorest insulator?
5. Were your predictions correct? If not, what made the results different?
6. What fabric or fabric combination would you want to be wearing if you had to spend some time in the water? Why?
7. Did the hats make a difference compared to the experiment in Student Handout #4? If so, what was the difference?
8. “You can stay warmer if you stay dry.” Do you agree or disagree with this statement? Why? Justify your comments by comparing the results of this experiment with the results from the experiment in Student Handout #3.

Name: _____ Date: _____

Wet and Dry Clothes in the Wind

1. Be sure to complete Student Handout #1 before starting this experiment.
2. Dress a cup in the following “clothes.” Do not use hats; they will get them in the next experiment. Leave one cup naked.

Arrange all the cups in front of the fan so that each will receive an equal amount of “wind.”
Take your first reading.

Turn on the fan, being careful not to blow your cups over. Take and record your second reading after 2 minutes.

Wait 2 more minutes each to take and record your third and fourth readings.

Fabric	First	Second	Third	Fourth	Overall Temperature Change
Jeans					
Wet Jeans					
Wool					
Wet wool					
Synthetic fleece					
Wet synthetic fleece					
Jeans & rain gear					
Wet jeans & rain gear					
Wool & rain gear					
Wet wool & rain gear					
Synthetic fleece & rain gear					
Wet synthetic fleece & rain gear					
Naked					

3. Which fabric or fabric combination was the best insulator?
4. Which fabric or fabric combination was the poorest insulator?
5. Were your predictions correct? If not, what made the results different?
6. Compare these results with your results from the experiments in Student Handouts #2 and #4.
7. Which fabric or fabric combination would you want to be wearing if you were on a water expedition for a long time? Why?
8. “You can stay warmer if you stay out of the wind.” Do you agree or disagree with this? Why?

Name: _____ Date: _____

Wet and Dry Clothes and Hats in the Wind

1. Be sure to complete Student Handout #1 before starting this experiment.
2. Dress a cup in the following “clothes” and “hats.” Leave one cup naked. Arrange all the cups in front of the fan so that each will receive an equal amount of “wind.” Take and record your first reading.

Turn on the fan, being careful not to blow your cups over. Take and record your second reading after 2 minutes.

Wait 2 more minutes to take and record your third reading and 2 more for your fourth.

Fabric	First	Second	Third	Fourth	Overall Temperature Change
Jeans					
Wet Jeans					
Wool					
Wet wool					
Synthetic fleece					
Wet synthetic fleece					
Jeans & rain gear					
Wet jeans & rain gear					
Wool & rain gear					
Wet wool & rain gear					
Synthetic fleece & rain gear					
Wet synthetic fleece & rain gear					
Naked					

3. Which fabric or fabric combination was the best insulator?
4. Which fabric or fabric combination was the poorest insulator?
5. Were your predictions correct? If not, what made the results different?
6. Compare these results to the results from the experiment in Student Handout #6.
7. Compare the results from this experiment with the results from the experiments in Student Handouts #3 and #5.
8. Which fabric or fabric combination would you want to be wearing if you were on a water expedition for a long time? Why?
9. Which of the five ways your body loses heat did you study in these experiments? Which “clothing” worked best to protect against each?

Hypothermia Letter

Time: 30-60 minutes

Overview

Write a letter about aspects of hypothermia.

Objectives

After completing this activity, students should be able to:

1. Write a definition of hypothermia.

2. Write an explanation of immersion hypothermia.
3. Explain in writing how food and exercise help prevent hypothermia.
4. Explain in writing the role of high heat loss areas in hypothermia.

Materials

- Student Handout #1 **Children Saved from Bay**

Procedure

1. Explain to students that they will be writing a letter about hypothermia.
2. Set the scene by reading Story #1 or telling a story in which someone becomes hypothermic.
3. Have students write a letter to a friend about an imaginary adventure on or near the water in which someone becomes hypothermic. The letter must include:
 - The definition of hypothermia
 - The definition of immersion hypothermia
4. Use the writing process to plan, revise, and edit writing.
 - The role of food and exercise in preventing hypothermia
 - The role of high heat loss areas in hypothermia

Variation

Write a letter to the editor to educate the public about hypothermia.

This activity addresses Alaska Content Standards:

Language Arts A-1 Effective writing, A-2 Writing conventions, A-4 Writing and speaking with purpose

Science A-14 Living things and their environments, A-15 Using local knowledge

Geography B-6 Making informed decisions about place, C-3 Regional environments

Skills for a Healthy Life D-6 Communication for community well-being

Children Saved from Bay

Rescuers find siblings adrift, two miles out

By K.C. Myers and John Leaning, staff writers

BREWSTER—They did the Hokey Pokey and the Tango. They told jokes and they laughed because “laughing keeps you warm.” When the state environmental police and the Dennis harbor master boat found their wooden raft after almost 2 ½ hours, the children, ages 9 and 12, were 2 miles out to sea.

Benjamin Gonnella’s temperature had dropped to subnormal 97.3 degrees. His sister, 12-year-old Rachel, admitted she really panicked. But they were both safe.

The two students of St. James School/Parish in Syracuse, N.Y., had hopped aboard a 10-by-10-foot wooden raft owned by the Cape Cod Sea Camps at about 2:40 p.m. yesterday.

Rachel said they were tired, and needed to rest on the raft before swimming back to shore. But while basking in the hot sun, they did not notice that they were drifting. When they turned to swim home, home was suddenly far away. “The land started looking really small,” Rachel said.

Ed Barber, sailing master at the Cape Cod Sea Camps, said the wooden raft had been securely anchored to the bottom, attached by half-inch nylon line that in turn was tied to a quarter-inch chain coupled to a large anchor. After their rescue, Ben admitted that on Thursday while playing around the raft at low tide, he had untied the rope attaching the raft to the anchor. Barber said the rafts were stenciled with “Keep Off” warnings and were for use only by summer campers, who arrive June 25.

Norma Gonnella, an English and literature tutor at Onondaga Community College, watched her kids swim to the raft before she

dozed off. But she woke with a start on the bayside beach. James Gonnella, her husband, told her the children and their raft were gone. “I ran to get my cell phone and dialed 911,” Norma Gonnella said.

Her call set off a chain reaction from police, fire and U.S. Coast Guard personnel.

She said the Brewster police were “phenomenal.” Within minutes they had the U.S. Coast Guard dispatched with a helicopter and had posted officers along the coastline with binoculars. Two Brewster rescue officers in the Dennis harbor master’s boat and a boat from the environmental police both went after the children from Sesuit Harbor.

Barber, who helped in the search, spotted them heading toward Eastham. He said that through his binoculars, the children and raft appeared as a small dot in the distance.

At first, Rachel said they were having fun coasting over the waves. But as the southwest wind pushed them out further, the waves got bigger. They started lapping over the raft menacingly, making the kids even colder. “We ripped off a board to try to row,” Rachel said. They considered swimming for shore, but it was just too far. “We started to get cold so we did the Hokey Pokey and the Tango,” Ben said. “We did our funky voices.” “Laughing keeps you warm,” Rachel said.

The two also prayed and were getting pretty close to panicking when the two rescue boats arrived with warming space blankets and a quick ride home.

It was around 5 p.m.

The Gonnella children, who are staying in a Brewster cabin until tomorrow with their parents, were not supposed to be on the rafts, Barber said. Norma Gonnella said she will take them both over to the Sea Camps today and make them apologize for untying the raft. Barber said, "The bottom line is that the kids are fine, and everybody is happy about that."

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Recognize and Treat Hypothermia

Time: 90-120 minutes total

Overview

Use video footage to identify signs and symptoms of hypothermia and describe appropriate treatment.

Objectives

After completing this activity, students should be able to:

1. List eight signs and symptoms of hypothermia.
2. List four steps for treating hypothermia at all levels.
3. List four actions to avoid when treating severe hypothermia.
4. When given a list of different signs, demonstrate appropriate steps for treating a hypothermic person.

Materials

Part 1

- *Titanic* video (15 minutes) **AMSEA**
- One per student, Student Handout #1 **Hypothermia Recognition and Treatment**
- *Casualties at Sea* video, Cape Beaver and Margaret Jane segment (5 minutes) **AMSEA**

Part 2

- *It Could Have Been Prevented* video (17 minutes) or *Fisheries Safety and Survival* video, Hypothermia segment (14 minutes) **AMSEA**

Part 3

- Blankets, hats, jackets, tarps or large plastic bags, and other material appropriate for treating a person for hypothermia

Procedure

Part 1

1. Explain that students will be evaluating the signs and treatment of hypothermia shown in several videos.
2. To set the scene, show footage from the *Titanic* video. Explain where the sinking takes place. Cue video to shortly after Jack tells Rose that the ship will “suck them down” (a myth, by the way). This is approximately 27 minutes before the end. Play about 15 minutes, stopping the video after the sunrise shot following old lady Rose’s statement and the collage of shots. Discuss with students what Jack and Rose looked like and how they must have felt.
3. Generate a list of signs and symptoms students have experienced when they have felt cold. Write them on the board in unlabeled columns with prehypothermia symptoms in one column and hypothermia symptoms in the other.
4. At the close of the discussion, label the columns and review the definition of hypothermia.
5. Distribute Student Handout #1 and instruct students that as they watch the next video, they are to mark each sign of hypothermia they observe in the first column of the handout.
6. Watch the Cape Beaver and Margaret Jane segment of the *Casualties at Sea* video. Point out that the person wearing a personal flotation device is the one in the best shape.
7. Review the answers.

Part 2

1. Review how to recognize hypothermia.
2. Instruct students that as they watch the next video, they are to mark each sign of hypothermia and the treatment they observe on Student Handout #1.
3. Watch *It Could Have Been Prevented* or *Fisheries Safety and Survival*, Hypothermia segment.
4. Discuss the treatment given during the video. Write a list on the board of appropriate treatment steps.

Part 3

1. Have students mark all possible signs and symptoms of hypothermia, and all appropriate treatment steps in the third columns of Student Handout #1.
2. Review appropriate treatment.
3. Using volunteers from the class for patients, have students practice treating each other for hypothermia.

Note: The treatment is in accordance with the *State of Alaska Cold Injuries and Cold Water Near-Drowning Guidelines*, revised January 1996. Compare it with your current state recommendations and adjust information as necessary.

This activity addresses Alaska Content Standards:

Language Arts D-2 Evaluating information

Science D-1, 3 Practical applications of scientific knowledge, D-6 Using reasoned decisions

Geography A-1 Use maps and globes, E-6 Physical hazards

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, B-5 Evaluating information, D-1 Responsible decisions, D-2 Safe and healthy environments

This activity is a variation of one submitted by Petersburg, Alaska, public school teacher Shannon Vandervest.

Name: _____ Date: _____

Hypothermia Recognition and Treatment

1. In the appropriate column below, mark the signs of hypothermia and the treatment steps that you observe in the videos.
2. In the far right column, mark all the possible signs and symptoms of hypothermia and all appropriate treatment steps.

Signs of Hypothermia	<i>Casualties at Sea</i>	Video 1	Video 2	All Possible
Stumbles				
Talks fast				
Can't stop shivering				
Very cold and not shivering				
Thinks fast				
Moves fast				
Fumbles				
Unconscious				
Can't keep head out of the water				
Moves slowly				
Doesn't think well				
Is bleeding				
Appears dead				
Mumbles				

Hypothermia Treatment	<i>Casualties at Sea</i>	Video 1	Video 2	All Appropriate
Be gentle				
Ignore the victim				
Put a hat on the victim				
Cover the victim in plastic				
Put cold water on the victim				
Give the victim a drink of alcohol				
Massage the victim's arms and legs				
Move the victim to a warm place				
Call for help				
Remove the victim's wet clothes				
Put the victim in hot water				
Put something warm under and over the victim				
Cover the patient's mouth and nose lightly with a scarf				

Hypothermia Recognition and Treatment

Hypothermia Signs and Symptoms	<i>Casualties at Sea</i>	<i>It Could Have Been Prevented</i>	<i>Hypothermia</i>	All Possible
Stumbles	x			x
Talks fast				
Can't stop shivering				x
Very cold and not shivering	x	x	x	x
Thinks fast				
Moves fast				
Fumbles	x			x
Unconscious			x	x
Can't keep head out of the water				x
Moves slowly	x	x	x	x
Doesn't think well	x		x	x
Is bleeding				
Appears dead			x	x
Mumbles	x			x

Hypothermia Treatment	<i>Casualties at Sea</i>	<i>It Could Have Been Prevented</i>	<i>Hypothermia</i>	All Appropriate
Be gentle		x	x	x
Ignore the victim	x			
Put a hat on the victim		x	x	x
Cover the victim in plastic				x
Put cold water on the victim				
Give the victim a drink of alcohol				
Massage the victim's arms and legs				
Move the victim to a warm place	x	x	x	x
Call for help		x		x
Remove the victim's wet clothes			x	x
Throw the victim in hot water				
Put something warm under and over the victim			x	x
Cover the patient's mouth and nose lightly with a scarf				x

Hypothermia Stories

Time: 60-90 minutes

Overview

Work in groups to analyze hypothermia experiences in news stories.

Objectives

After completing this activity, students should be able to:

1. Apply knowledge of hypothermia symptoms, signs, and treatment to analyze case studies of environmental trauma.

2. Apply knowledge of hypothermia to determine what went wrong in each case study and how the disaster might have been prevented.

Materials

- Overhead #3 **Hypothermia**
- One per group, Student Handout #1 **Two Kayakers Survive Dunking in Sitka Sound**, #2 **Hypothermia: A Potential Killer Anytime, Anywhere**, or #3 **Tug Captain Recounts Sinking**
- One per group, Student Handout #4 **Hypothermia Stories**

Procedure

1. Explain to students that they will be analyzing news stories about boating incidents involving hypothermia.
2. Review the signs, symptoms, and treatment of hypothermia and the differences between mild and severe hypothermia. Show Overhead #3.
3. Break the class into working groups of three or four students. Give each group a copy of Student Handout #1, #2, or #3. Each group works independently.
4. Have each group choose a Recorder, Presenter, and two Readers.
5. Distribute Student Handout #4.
6. The Readers take turns reading the article to their group while the Recorder writes down the group's answers to the questions on Student Handout #4.
7. When all groups have completed the handout, they take turns summarizing their story for the class. Discuss how difficult it can be to distinguish between mild and severe hypothermia.

Note: The treatment cards are in accordance with the *State of Alaska Cold Injuries and Cold Water Near-Drowning Guidelines*, revised January 1996. Compare it with your current state recommendations and adjust information as necessary.

This activity addresses Alaska Content Standards:

Language Arts B-1 Meaning from written text, B-2 Investigations in written materials, C-5 Project collaboration, D-1 Developing a logical position, E-1 Understanding perspective

Science A-14 Living things and their environments

Geography E-6 Physical hazards

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, B-1 Risk and consequences, B-5 Evaluating information, C-5 Effects of attitude and behavior, D-1 Analyzing situations, D-2 Drawing logical conclusions

Two Kayakers Survive Dunking in Sitka Sound

By Shannon Haugland, Sentinel Staff Writer

As he struggled to swim ashore in Monday's late afternoon darkness, 27-year-old Eli Frazier found himself thinking of a lighter moment.

"I was thinking about the joke we were telling earlier, about picking the shortest day of the year for a kayak trip," Frazier said today. "Now, that joke wasn't funny."

The main problem was not to freeze to death in the icy waters where Frazier and a companion, J. R. Loiland, found themselves when their double kayak flipped. They were about 500 yards offshore from Halibut Point.

"It was a pretty scary experience," said Frazier. He and Loiland, 19, were in the water about 25 minutes before they were rescued.

They were taken in ambulances to Sitka Community Hospital for treatment for hypothermia. Loiland was released the same night; Frazier spent the night in the hospital and was released this morning, they said.

The pair were in a rented kayak headed from old Thomsen Harbor to Middle Island to meet friends for a solstice celebration. Before they set off into the open water they practiced paddling around the lights in the channel, Frazier said.

It was rapidly getting dark, but everything seemed to be going well as they passed through the breakwater en route to Middle Island. It was some time after that when Frazier's feet slipped off the rudder pedals that steer the boat.

"I was scrambling to get my feet back on the footpegs," he said. "I guess I had a moment of panic when we got waked by a boat at the same time."

The kayakers ended up in the water, but free of the boat.

"Everything happened so fast at the time," Frazier said. "I'm not sure what made it so hard to control. We leaned the wrong way at the wrong time."

Frazier said they managed to get back into the swamped boat, but before they could pump it out it sank under them. Soon they were knocked over from the wake of another passing boat.

They had safety gear, and Frazier tried to set off a distress flare.

"I fumbled with the flares, but they take quite a bit of dexterity to use," he said.

When the second boat passed, the two were still trying to pump out the boat and did not yell for help. When they realized the de-watering effort was fruitless and they were unable to set off a flare, they took the next step.

"That's when we started screaming," Frazier said. They were now outside the boat and trying to swim.

"We would take one stroke and yell, another stroke and yell," said Frazier. "I guess someone heard us."

Several people on shore either heard the yelling or saw Frazier's headlamp.

One of those was Joann Torgeson, who was at her home in the 4000 block of Halibut Point Road. She heard the screaming and told Jim Way and Eric Davenport who were doing construction work on her house.

She also called the fire hall, which dispatched ambulances and a fire truck. And she called family friend Mike Johnson who lives on nearby Viking Way and has a skiff at The Cove Marina, Way said. The harbor master also was alerted to the emergency.

Way said he and Davenport were keeping an eye on the light from Frazier's headlamp so they could help direct the rescuers.

As they arrived at The Cove to meet Johnson, another boat owner, Eric Holmlund, was arriving to help. He had been at the Theobroma Chocolates shop on Granite Creek Road, when someone ran in to report the kayak upset.

Since Holmlund had already been out in his boat, the *Hammerhead*, that day, it was warmed up and ready to go. Also, said Way, it had a stove, which they knew would be more useful in rescuing hypothermic swimmers than Johnson's skiff. So Johnson, Way and Davenport jumped aboard the *Hammerhead* with Holmlund and headed for the men in the water.

Way said it took about 10 minutes to reach the overturned kayakers, both of whom were wearing lifejackets.

"We saw two people clinging to the nose (of the kayak) floating," he said. "That was the only part still above the water."

They were hauled on board and put in the heated cabin of the boat, he said.

"They were real stiff, they were moaning when we pulled them on board," Way said.

A short time later, the harbor master's boat arrived, and took the two men ashore at Halibut Point Recreation Area. The city boat, a front-end loading skiff, draws less water than the *Hammerhead*, which made it easier to put ashore on the rec area beach.

Also responding to the cry for help was Marty Martinez, the caretaker at the Halibut Point Recreation Area. After someone drove down to

the rec area and told him about the two men in distress, he also called the fire hall and the U.S. Coast Guard Air Station, where he is assigned as a medical corpsman.

When the kayakers were brought ashore, about 30 people were on hand to put them on backboards, carry them out and help any way they could, Martinez said.

Frazier said that when Loiland arrived at the hospital, he was still clenching a distress flare in his frozen hand.

The two men, both members of the U.S. Coast Guard Aids to Navigation Team on the *Woodrush*, said they feel happy to be alive.

"We keep on going over it in our heads, what if we had done something different," Loiland said. "But that boat was underwater before we could do anything."

Loiland said he has some whitewater kayaking experience, but that Frazier had much more open-water kayak experience than he did.

While neither would want to relive the 25 minutes they spent in the water, both said it has not turned them off of kayaking.

"It was just a bad thing that happened," Loiland said. "But it's not going to keep us from doing anything we like to do, such as kayaking."

They said they wanted to thank everyone involved in the rescue, including Holmlund and the others on the *Hammerhead*, Martinez, the harbor department, the fire department and hospital staff.

Frazier also wanted to thank his cold water survival instructor Doug Jensen, and credited the course for teaching him the appropriate warm clothes to wear. If he could change anything, it would be to be better prepared with the flares and to practice emergency procedures with a double kayak.

Hypothermia

A potential killer anytime, anywhere

It was March in South Louisiana and the last real cold front of the year whipped the water into an angry, foamy mass of three-foot high waves. A small workboat bounced against the pilings as two workers and their supervisor loaded their gear in preparation for servicing an oil well located in a nearby bay.

Struggling to stay on his feet, one of the workers told the supervisor he didn't think it was a good idea to go out in such a small boat under such rough conditions. The supervisor smiled condescendingly and dismissed the advice. Silently, the workers braced themselves as the supervisor revved the outboard and the boat pulled away from the dock.

After a long, tiring day of fighting wind and waves, the men completed their work and headed back toward the dock.

It was cold by Louisiana standards, in the low fifties, and the wind and creeping darkness made it seem even colder. The chill and the bucking of the vessel made everyone miserable and their thoughts—especially those of the supervisor—were focused on getting home as quickly as possible. Not a word of protest was spoken as he crashed the workboat into the oncoming waves like an offshore racer headed for the finish line.

In the blink of an eye, the men's thoughts turned from home to a struggle for survival.

As the boat surged over one of the waves, a sudden gust of wind caught it and flipped it over. The disoriented men clawed like cats at the slick aluminum hull trying to free themselves from the grip of the unpleasantly

cold water. It soon became obvious their efforts to get on top of the overturned boat were futile; so, they hurriedly swam to a nearby wellhead and pulled themselves on the work platform surrounding it.

There, they spent the next 12 hours with wind steadily whisking away the heat from their bodies as they huddled together on the lonesome, steel island.

When the rescue team finally arrived, hypothermia had nearly claimed the men's lives. In fact, the rescuers initially thought the men were dead, since they were unconscious and no pulse could be felt at the wrist. It was only after one of the alarmed rescuers checked the carotid pulse point that a flicker of life was detected.

Gently, the stiff bodies were lowered to the rescue vessel where their damp clothing was carefully removed and replaced with warm blankets as the boat rushed for the ambulance waiting at the dock.

In the hospital, the men were slowly rewarmed as doctors closely monitored them for any signs of heart arrhythmia, such as ventricular fibrillation. The injured men gradually recovered, although two of them suffered neurological problems affecting their extremities that persisted for several months.

Hypothermia is a potentially life-threatening hazard for personnel who work around water, even in places like Louisiana and Florida. It is a hazard workers must take seriously all year round and in all geographic areas.

Hypothermia is a condition in which the body is cooled below the optimum temperature necessary for the chemical reactions that support life to occur. The body is capable of increasing its temperature in response to slow, relatively minor changes in ambient temperature by metabolizing food.

Since water is a very efficient conductor of heat, immersion can produce a rapid decrease in temperature for which the body cannot compensate. Research has shown the body has trouble warming itself up any time water temperature is less than 70°F.

This is a relatively warm water temperature usually only exceeded in the late spring, summer and early fall in bodies of water located in the southern states.

In the blink of an eye, the men's thoughts turned from home to a struggle for survival.

Tug Captain Recounts Sinking

By Roger Kane, Log Staff

As the tugboat *Gail S* slipped beneath the surface of the Bering Sea last Wednesday morning, its captain, the mate, the engineer and the cook clung to whatever they could find for survival. And they braced themselves for a long wait for the U.S. Coast Guard helicopters.

“You don’t think about the time,” said captain Steve Miller of Seward. “You just hang on until they get there. You just hang on until you can’t hang on no more. You get your mind in a state. You know you’re in deep trouble and you just hang on until you die.”

Before the tug sank, Miller said crewman Les Carstensen “was having trouble breathing, so I got him into the suit and into the water. Then I got into the water and we swam away from the vessel.”

“As soon as it sank, I was trying to get everyone together. It’s important to keep the crew as compact as you can. That way if you drift any distance, you’re all together. The engineer (Dean Stabbert) recovered the liferaft” and although he wasn’t wearing a survival suit, he appeared safe, Miller said.

“I found a working vest (flotation device) and put that on,” he said. Meanwhile, the cook (Bruce Hix) was floating around in a wooden box he found.

“A patrolling C-130 that happened to be in the area dropped liferafts and we made some efforts to get into the rafts, but we couldn’t. The rafts are almost impossible to board. Especially if you’re in a weakened state. There’s no way to get over those tubes. So we just held on to that raft,” Miller said.

“And I could see Les (Carstensen) floating off a bit, but I couldn’t get any response from him,” he said.

Upon reaching Carstensen, he found “there was no pulse and he wasn’t breathing. I’m not qualified to say, but I think he died of a heart attack. At that point I got the mate with me (Roald Biktjorn) and I kept Les with me. I was in the water six hours,” without a survival suit, Miller said.

“They think I’m amazing. I think I’m lucky. That’s it,” he said.

“I’m just about as lucky as a man can be. The water was not that intensely cold. Certainly I’ve felt colder water. But the way you cool down and the way you warm up is an interesting deal,” Miller said.

“The blood in your extremities is slowly drawn into the core of your body and your arms and legs go numb,” he said.

“Your entire body shuts down. You’re just down to heart, lungs, liver and brain. And that’s it. It shuts down what it needs to shut down, to keep going what it needs to keep going,” he said.

Miller said he “was never afraid. I’m not afraid of dying. I’m a firm believer in the fact that we live, then we die. The idea of dying holds no terror for me. It’s a progression of life. And when I’m done with this job, I’ll go on and find out what’s next. I just don’t want it to hurt a lot and I don’t want it to take a long time.

“I’ve had a lot of close calls in my life. Anyone who’s done this as long as I have, also has. I know 300-400 people who’ve died out there. It’s a dangerous job, but a lot less dangerous than it

used to be. It could eventually kill you. The ocean can kill you. Some she doesn't like. Me, she likes. We get along just fine," he said.

"It's a way of life. We get to do things no one gets to do. We get to see things no one gets to see. In my life I've seen killer whales attack a pod of blue whales and kill them. I've seen the wind blow at 200 miles per hour on the ocean," and he says he's learned to accept the risks inherent in his profession.

"It's not a bad life. It's not a bad life at all. There's no replacement in this business for experience, but I would prefer to pass up repeating this experience," he said.

Miller said looking back, it would have been best to get off the boat sooner. "I would have the crew off the boat into the liferaft and deal with it from there. If we had done something sooner, Les might have lived. I don't know."

"Something that should be noted though is the fact that most of the crew were not greenhorns. Biktjorn—he's 1,600-ton inspected all ocean licensed. Les was also," Miller said.

Miller said the entire event happened extremely fast. And at best they could've had minutes more time, "maybe seconds," he said.

"The boat was in pretty good shape. We'd just completed a long and strenuous job, but I really have no idea what caused the thing to sink. Obviously, there was not water-tight integrity where we thought there was."

He said the tug rolled to its side, then sank stern first.

Miller was hospitalized in Dillingham following the ordeal and is recuperating in Seward. He said, "When your body comes back, it's strange. They warm you up real slow. A degree at a time. And your muscles are sore, but not for two days. It was like two days before I felt anything."

Then he really felt something, but "it's not something I'd quit over. It's something to learn from, not quit over. It's what I do for a living and it's an inherent risk in the business.

"And it's a tough business," he says.

The sinking of the *Gail S* is proof.

"The engineer came up and told me we were getting water in the engine room and that we were taking it from the stern someplace.

"I went down and looked at what he was talking about and it was a problem, but not a serious problem. But it developed into a serious problem rather quickly," Miller said.

"We had the barge behind us and all of a sudden the boat lists to the starboard side, which made me nervous. After being on boats so long, I know there was a problem. So I went out on deck and looked around. Water was washing over the starboard rail and that's when I called a mayday in.

"I gave them our position and triggered the EPIRB-406. I told the crew to get their survival suits. I got mine and laid it out on top of the boat. I didn't put it on right away because I needed to move around. I didn't think we could save the tug, but I wanted to try.

"It wasn't long after that, that the boat started to roll starboard and it became obvious we weren't going to be able to save anything. And at that point I told one of the crew to pump (bypass) the hydrostatic device on the liferaft and we'd manually deploy the liferaft.

"The boat started rolling quite rapidly to the starboard side and I told them to get off the boat and that we'd deal with it after the boat sank. At that point I decided to put on my survival suit and realized one of the deckhands was putting my suit on. Les Carstensen, he's the guy that died.

"There will be an investigation conducted by the U.S. Coast Guard," Miller said.

"It's fairly standard procedure for the U.S. Coast Guard to do an investigation," said Chief Tod Lyons, U.S. Coast Guard public affairs officer.

The *Gail S* is owned by Island Tug and Barge of Seattle. It was heading for False Pass at the time of the sinking, towing a barge loaded with heavy earth-moving equipment en route to Seattle.

Name: _____ Date: _____

Article Title: _____

Hypothermia Stories

1. Using complete sentences, describe the situation that led to trouble for the victim(s) in the article.
2. Describe the environmental conditions at the time of the incident.
3. Did the victim(s) suffer from slow onset (dry) hypothermia or rapid onset (immersion) hypothermia? What evidence described in the article led you to this conclusion?
4. What signs of hypothermia did the victim(s) in the story display?
5. What medical treatment did the victims receive?
6. How could this situation have been prevented?

Hypothermia Stories

Two Kayakers Survive Dunking in Sitka Sound

1. Using complete sentences, describe the situation that led to trouble for the victim(s) in the article.

Two men were kayaking at dusk on the shortest day of the year. They capsized after losing control of their rudder and getting waked from another boat. They think they leaned in the wrong direction at the wrong time.

2. Describe the environmental conditions at the time of the incident.

It was December, almost dark, and there was boat traffic that caused wakes.

3. Did the victim(s) suffer from slow onset (dry) hypothermia or rapid onset (immersion) hypothermia? What evidence described in the article led you to this conclusion?

They suffered from rapid onset hypothermia because they were in cold water for 25 minutes. They were stiff and moaning, and one was clenching a flare in his hand. One spent the night in the hospital.

4. What signs of hypothermia did the victim(s) in the story display?

They fumbled with flares and were stiff; plus one held a flare in his hand all the way to the hospital.

5. What medical treatment did the victim(s) receive?

They were transported to shore by boat in a warmed cabin, an ambulance met them, and they were treated at the hospital.

6. How could this situation have been prevented?

It might have been prevented if they had more experience kayaking, if the one man was more familiar with steering the kayak so he didn't panic, and if they were kayaking in the daylight.

Hypothermia Stories

Hypothermia: A Potential Killer Anytime, Anywhere

1. Using complete sentences, describe the situation that led to trouble for the victim(s) in the article.

The last real cold front of the season created weather unsuitable for a small boat. Despite this the supervisor insisted the workers service an oil well. After their work they were tired, and the supervisor especially wanted to get home quickly so he plowed into the waves.

2. Describe the environmental conditions at the time of the incident.

There was a cold front, the temperature was in the low fifties, there were 3-foot seas, and it was windy.

3. Did the victim(s) suffer from slow onset (dry) hypothermia or rapid onset (immersion) hypothermia? What evidence described in the article led you to this conclusion?

It was more rapid than slow onset. They were in the water so they were wet, and they spent 12 hours in the wind wearing wet clothes.

4. What signs of hypothermia did the victim(s) in the story display?

They were unconscious, had hard-to-detect pulses, and were cold and stiff.

5. What medical treatment did the victim(s) receive?

They were handled gently, their wet clothing was removed, they were covered in warm blankets, and were taken by ambulance to the hospital where they were rewarmed slowly and carefully.

6. How could this situation have been prevented?

They should not have gone out. The supervisor used poor judgment to go out in the weather and again at the end of the day when he had "get-home-itis."

Hypothermia Stories

Hypothermia: Tug Captain Recounts Sinking

1. Using complete sentences, describe the situation that led to trouble for the victim(s) in the article.

The tug, the Gail S, was towing a barge when the engineer reported they were taking on water near the stern. The tug listed to starboard and water came over its rail. Then it started to roll to starboard. They abandoned ship before the tug sank.

2. Describe the environmental conditions at the time of the incident.

The article doesn't mention weather or sea conditions.

3. Did the victim(s) suffer from slow onset (dry) hypothermia or rapid onset (immersion) hypothermia? What evidence described in the article led you to this conclusion?

They suffered from rapid onset hypothermia; they were in the water.

4. What signs of hypothermia did the victim(s) in the story display?

Their arms and legs became cold and numb.

5. What medical treatment did the victim(s) receive?

They were medevaced to a hospital and rewarmed slowly.

6. How could this situation have been prevented?

It is hard to say since the cause of the flooding is unknown. They all should have worn immersion suits. Once the emergency occurred, the captain felt that getting off the boat sooner could possibly have saved Les Carstensen's life. They should have made an effort to get into the liferaft immediately. Training drills with a liferaft could have resulted in their getting inside the liferaft once they were in the water.

Hypothermia Recognition and Treatment Game

Time: 60-85 minutes

Overview

Use cards to match hypothermia scenarios with appropriate treatment.

Objective

After completing this activity, students should be able to match five hypothermia scenario cards with appropriate treatment.

Materials

- One per group of three to four students, **hypothermia scenario cards** (make from Template #1) [AMSEA](#)
- One per group of three to four students, **hypothermia treatment cards** (make from Template #2) [AMSEA](#)
- Overhead #3 **Hypothermia**
- *Casualties at Sea* video, Cape Beaver and Margaret Jane segment (5 minutes) [AMSEA](#)
- *Fisheries Safety and Survival Series* video, Hypothermia segment (14 minutes) [AMSEA](#)

Procedure

Before Class

1. Make one set each of hypothermia scenario cards and hypothermia treatment cards per group of three to four students. Use different color paper for the treatment cards than for the scenario cards, or borrow sets of cards from AMSEA. Each template has two blank cards so you can write your own local scenarios and matching treatment.
5. After viewing, divide the class into groups of three to four students. Groups work together to identify the severity of each survivor's hypothermia and discuss the treatment the survivors were given versus the appropriate treatment. Emphasize that cases aren't always cut and dried.

During Class

1. Explain that students will be matching appropriate hypothermia treatment to a hypothermia scenario.
2. Show the Hypothermia segment of *Fisheries Safety and Survival Series* (14 minutes) and discuss hypothermia signs, symptoms, and treatment. Show Overhead #3.
3. View the first 3 to 4 minutes of the Cape Beaver and Margaret Jane segment.
4. Cue students when each of the three survivors is brought on board. Direct them to observe the survivors closely for signs of hypothermia.

Discussion points

- Since the first person had the “umbles” and collapsed, he should receive treatment for severe hypothermia.
- The second man (in red T-shirt) was more coordinated. One can argue that he collapsed from exhaustion, but given the environment and the need to be cautious he should receive the same treatment as the first person.
- The third man, wearing a PFD, was coordinated and acted normally until the very last shot of him, when he collapsed. Treating him as the other two is the most cautious action, but treating him as mildly hypothermic would be okay. He, especially, illustrates the ambiguities in recognizing the severity of hypothermia.

- As viewers we can only see and not touch or talk with these people. What questions should be asked and what other information would help determine treatment?
6. Distribute a set of **Hypothermia Scenario Cards** and a set of **Hypothermia Treatment Cards** to each group.
 7. Students read the scenario cards, determine the severity of the situation, and match the scenario cards with the appropriate treatment cards.
 8. After the cards are matched, a volunteer from each group reads a scenario card and the matching treatment card. If all groups agree that the treatment matches the scenario, move to the next group and repeat. If groups do not agree, discuss why and whether more than one treatment may be appropriate for a given scenario.

Variation

Give half the students a scenario card and the other half a treatment card. After students have read their cards carefully, they move around the room, comparing details, to seek their scenario-treatment match.

Note: The treatment cards were developed in accordance with the *State of Alaska Cold Injuries and Cold Water Near-Drowning Guidelines*, revised January 1996. Compare the treatment cards with your current state recommendations and adjust information as necessary.

This activity addresses Alaska Content Standards:

Language Arts A-6 Using visual communication, B-1 Meaning from written text, B-2 Investigations in written materials, D-1 Developing a logical position, D-1-D Analyzing information, D-4 Explain and defend a position

Science A-14 Living things and their environments, A-15 Using local knowledge, B-1 Scientific processes, C-6 Scientific discovery, D-1, 3 Practical applications of scientific knowledge, D-6 Using reasoned decisions

Geography E-6 Physical hazards

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-5 Well-being of family, A-6 Making informed choices, B-1 Risk and consequence, B-2 Effective communication, C-5 Effects of attitude and behavior, D-2 Safe and healthy environments

Hypothermia Scenario Cards

A.	<p>You are crossing a creek and get swept off your feet. You come ashore 100 yards downstream and are cold, wet, and shivering uncontrollably. You are alone, far from home, but have a pack with a wet change of clothes, food, water, and a survival kit with a garbage bag.</p>	D.
B.	<p>Your friend has fallen overboard into 45° F water. She is shivering uncontrollably and unable to help herself back onboard. It takes both of you 10 minutes to get her onboard the boat. Your boat has a cabin and you have dry clothes available.</p>	E.
C.	<p>Your boat sank. You were able to don your immersion suit before entering the water but didn't have a liferaft. You spent 12 hours in the immersion suit in the water before being rescued by a passing fishing boat. Although your clothes are dry, you are severely hypothermic. The boat has a radio.</p>	F.
	<p>You just finished diving with your scuba diving class in a cold lake in early spring. Your dive suit leaked a little around the neck so your clothes are wet. On the ride home you feel very cold and can't seem to warm up. There is a thermos of hot chocolate in the car with you.</p>	
	<p>You are canoeing down a river with a friend. You are both well-dressed for the trip in synthetic fleece and wool, but when you enter a set of rapids the boat tips over. You are in the water for several minutes while swimming the boat to shore and you are very cold and shivering when you reach land. You have survival kit with a garbage bag in it.</p>	
	<p>You come across someone who is holding onto an overturned kayak. The water temperature is 58° F. You help the person into your skiff. He is slow to respond to your questions and you notice he smells of alcohol. He is unclear about how long he has been in the water. You are 10 to 20 minutes from town.</p>	

Hypothermia Treatment Cards

A.	<p>You should:</p> <ul style="list-style-type: none"> • Wring out your wet clothes and put them back on. • Cover your head to prevent heat loss. • Use a garbage bag for a windbreaker. • Eat and exercise to get warm. 	<p>You should:</p> <ul style="list-style-type: none"> • Change into dry clothes. • Cover your head and neck to prevent further heat loss. • Turn the heater on in the car. • Drink the hot chocolate. • Eat and exercise to rewarm. 	D.
B.	<p>You should:</p> <ul style="list-style-type: none"> • Help her into the cabin of the boat. • Change her into dry clothes and a hat. • Gently rewarm her in a sleeping bag or blankets. • Watch her for worsening symptoms and treat for severe hypothermia if needed. 	<p>You should:</p> <ul style="list-style-type: none"> • Wring out your wet clothes and put them back on. • Use a garbage bag for a windbreaker and cover your head. • Eat and exercise to get warm. • Check your friend for hypothermia. 	E.
C.	<p>You should be:</p> <ul style="list-style-type: none"> • Gently carried into the heated cabin. • Gently removed from immersion suit and any wet clothes. • Insulated under and over yourself, and gently rewarmed. • Monitored closely. • Medevaced as soon as possible. 	<p>You should:</p> <ul style="list-style-type: none"> • Put an extra hat on him. • Insulate under him if possible. • Wrap him in a tarp and place him so he is out of the wind. • Call for help and transport to town where an ambulance should meet you. 	F.

Wahoo!

Time: 35-45 minutes

Overview





Use board game played in teams to summarize unit.

Objectives

After completing this activity, students should be able to:

1. Define hypothermia.
2. Describe the differences between dry and immersion hypothermia.
3. Identify four general causes of hypothermia.
4. List the five high heat loss areas.
5. List four steps to help to prevent hypothermia.
6. List four signs and symptoms of hypothermia.
7. List four hypothermia treatment steps.

Materials

- One per group of four students, **Wahoo! game board** (make from Templates #1 and #2 or borrow whole game from AMSEA) 
- Two per group of four students, pieces of 8 1/2" x 11" cardboard (if making own game boards)
- Glue and a way to laminate (if making own game boards)
- One per group of four students, set of **Wahoo! cards** (make from Template #3) 
- One per group of four students, **Wahoo! game thermometer** (make from Template #4) 
- One per group of four students, white die and red die 
- One per group of four students, Student Handout #1 **Directions for Play**

Procedure

Before Class

1. Make **Wahoo! game boards**. For each board, make a copy of the **Wahoo! game board** top and bottom, and glue each to a piece of cardboard so the six rows and six columns of squares line up. Color the dice along the top red. Laminate.
2. Make a set of **Wahoo! cards** for each board by copying the **Wahoo! card** template onto heavy paper and cutting along the lines. If making multiple sets, use different colors to help keep sets separate. Shuffle cards before using.
3. Make a **Wahoo! game thermometer** for each board by making a copy of the **Wahoo! game thermometer** template and making slits along the dotted lines.

During Class

1. Explain to students that they will be playing a board game to review hypothermia.
2. Divide class into groups of four, and have each group form two teams.
3. Provide each group with a game board, one red and one white die, one set of cards, and one game thermometer.
4. Place cards face down to cover every square on the board.
5. Follow the directions on Student Handout #1 **Directions for Play**.

Note: The treatment here is in accordance with the *State of Alaska Cold Injuries and Cold Water Near-Drowning Guidelines*, revised January 1996. Compare it with your current state recommendations and adjust the information as necessary.

This activity addresses Alaska Content Standards:

Language Arts B-1 Meaning from written, oral, and visual text

Science D-1, 3 Practical applications of scientific knowledge

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed choices, B-1 Risk and consequence, D-2 Safe and healthy environments

**Wahoo! Game
Board Top**



WAAHOO!



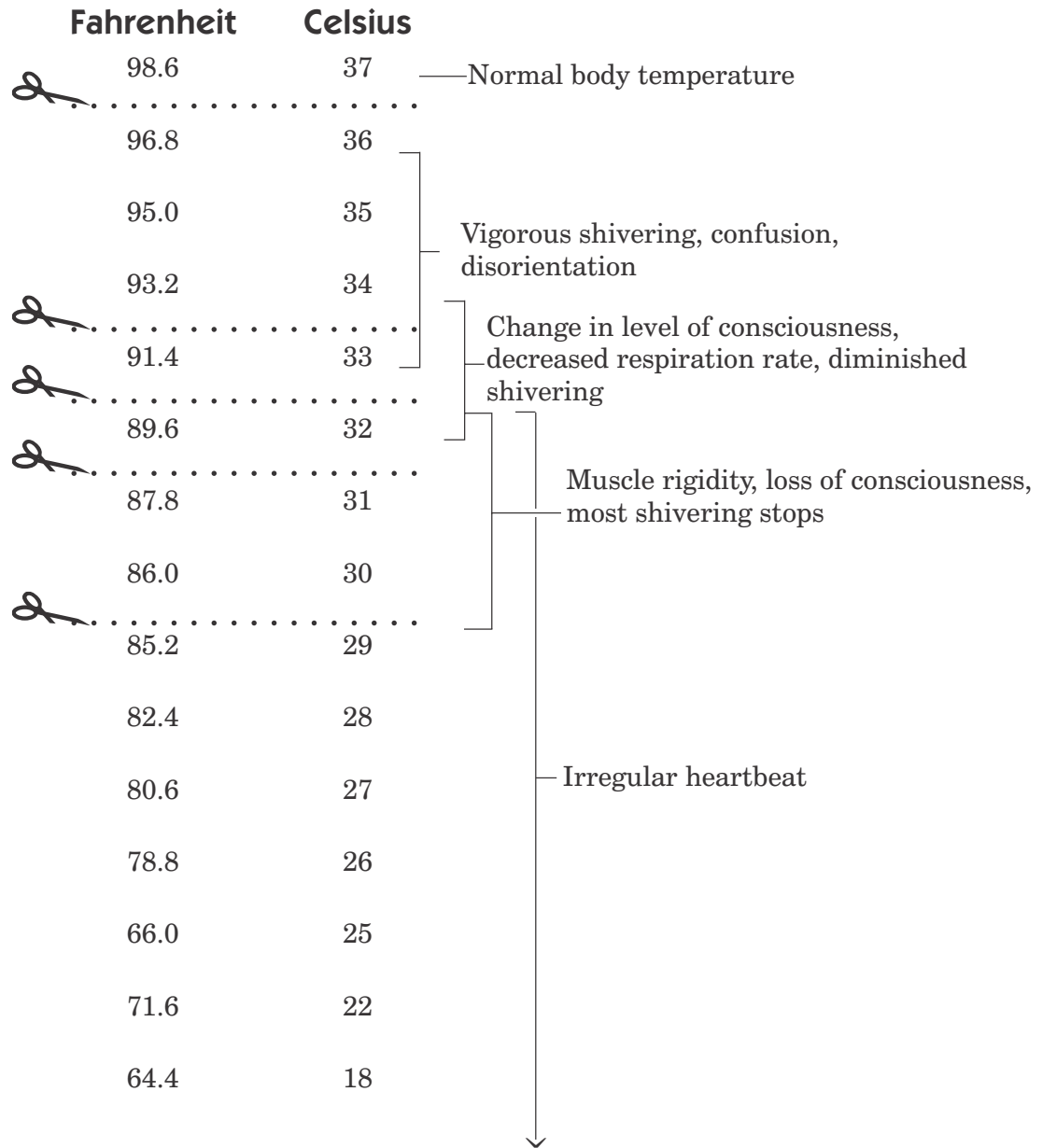
Wahoo! Game Board Bottom

Wahoo! Cards

<p>What is dry hypothermia? <i>Hypothermia that occurs slowly when you are dry</i></p>	<p>Water cools your body _____ times faster than air of the same temperature. 25</p>	<p>Name two fabrics that insulate well when wet. <i>Synthetic pile, fleece, polypropylene, wool</i></p>
<p>What is immersion hypothermia? <i>Hypothermia that occurs rapidly from being in cold water</i></p>	<p>From which part of your body do you lose the most heat? <i>Your head</i></p>	<p>Name two things you can do to help prevent hypothermia. <i>Eat, exercise, dress in appropriate layers, stay dry, stay warm</i></p>
<p>You can become hypothermic in water less than ____ °F. 91</p>	<p>Name three ways your body gains heat. <i>Digestion of food, exercise, external heat sources</i></p>	<p>If you work up a sweat will you get hypothermia more quickly? Yes</p>
<p>What is the human body's "normal" temperature? 98.6 °F</p>	<p>Name the five high heat loss areas. <i>Head, neck, underarms, sides of the chest, and groin</i></p>	<p>If you feel cold what can you do to avoid hypothermia? <i>Eat and drink water, exercise, insulate your high heat loss areas better, get out of the cold and wet, get dry</i></p>
<p>Where is your body core? <i>Inside your trunk and head, where your heart, lungs, and brain are.</i></p>	<p>If you feel cold what parts of your body should you insulate better? <i>Your high heat loss areas: head, neck, underarms, sides of the chest, and groin</i></p>	<p>List four signs and symptoms of hypothermia. <i>Feel cold, shivers or don't shiver, impaired judgment, altered level of consciousness (stumble, mumble, fumble), depressed vital signs (pulse or breathing), response to verbal or painful stimuli may be delayed or absent</i></p>
<p>Define hypothermia. <i>The cooling of the body's core</i></p>	<p>Name two ways that your body generates its own heat. <i>Digestion and exercise</i></p>	<p>List four things to do for people who are hypothermic. <i>Be gentle, reduce further heat loss (put a hat on them, move them to a warm place, remove wet clothes or cover with plastic, insulate their high heat loss areas, cover their mouth with scarf) call for help and transport to a medical facility if possible</i></p>

<p>Should you treat a hypothermic person gently? <i>Yes</i></p>	<p>If you feel cold what piece of clothing will help you greatly to feel warmer? <i>A hat</i></p>	<p>Should you massage a hypothermic person? <i>No</i></p>
<p>Does a hypothermic person act as they usually act? <i>No</i></p>	<p>What is a good way to stay dry when on the water on a rainy day? <i>Wear rain gear and rubber boots</i></p>	<p>List five ways your body loses heat. <i>Radiation, respiration (breathing), conduction (contact with cold surfaces), convection (wind, moving water), evaporation (sweating)</i></p>
<p>What effect does alcohol have on hypothermia? <i>It makes blood vessels stay open so a person's core cools down more quickly</i></p>	<p>Name two fabrics that insulate well in a cold, wet environment. <i>Synthetic pile, polypropylene, fleece, wool</i></p>	<p>Which is better to wear on a boat trip, a cotton sweatshirt or a synthetic fleece sweatshirt? <i>Synthetic fleece sweatshirt</i></p>
<p>Should you add heat to a hypothermic person's high heat loss areas? <i>Yes, cautiously, but don't burn him/her</i></p>	<p>Name a fabric that does not insulate well when wet. <i>Cotton, silk</i></p>	<p>Which is better to wear on the water, jeans or fleece sweat pants? <i>Fleece sweat pants</i></p>
<p>Should you put a hypothermic person in hot water? <i>No</i></p>	<p>Hypothermia can occur in air temperatures below _____ °F. <i>80</i></p>	<p>Will you get hypothermic faster if you are wet or if you are dry? <i>Wet</i></p>
<p>What is one substance that will speed up hypothermia? <i>Alcohol, cold water</i></p>	<p>List three factors that can cause hypothermia. <i>Rain, snow, air temperature below 91 °F, wind, inadequate clothing, alcohol consumption, immersion in cold water, not eating enough, inactivity</i></p>	<p>If you fall in the water, what is the best thing to do? <i>Get out of the water</i></p>

Wahoo! Game Thermometer



Directions for Play

1. Place one card face down on each square on the board.
2. The first team rolls the dice. Place the red die at the top of the corresponding red column on the Wahoo! board. Place the white die next to the corresponding white row of the Wahoo! board. For example, if the team rolls a red 6 and a white 3, the red die would be placed at the top of the sixth column and the white die would be placed to the left of the third row.
3. A member of the opposite team reads out loud the question from the card located in the box where the row and column marked by the dice intersect. In the example, the card to read is at the intersection of the third row and the sixth column.
 - If the question is answered correctly, the team that answered keeps the card, says, “Wahoo!,” and places the card in the lowest slot on their game thermometer. They give the dice to the other team.
 - If the team gives the wrong answer, the correct answer is read aloud, the card is returned to the game board face down, and the team passes the dice to the other team.
 - If the question you are supposed to answer has already been correctly answered, roll again.
 - The first team to fill its game thermometer all the way to the top, or the team with the most cards after the board has been cleared or time runs out, wins.

Hypothermia Anagrams

Time: 30 minutes

Overview

Use anagram word puzzles to review hypothermia concepts.

Objectives

After completing this activity, students should be able to:

1. List the five high heat loss areas.

2. List the five ways your body loses heat.
3. List four steps to take to help prevent hypothermia.

Materials

- One per student, Student Handout #1 **Hypothermia Anagrams**

Procedure

1. Explain to students that they will be doing word puzzles to review hypothermia.
2. Review the high heat loss areas and ways the body loses heat, and discuss basic steps to help prevent hypothermia.
3. Distribute and have students complete Student Handout #1. When finished, correct them together and discuss any answers that caused disagreement or difficulty.

This activity addresses Alaska Content Standards:

Language Arts A-6 Using visual communication, B-1 Meaning from written text, D-1-D Analyzing information

Science D-1, 3 Practical applications of scientific knowledge

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, D-2 Safe and healthy environments

Name: _____ Date: _____

Hypothermia Anagrams

An anagram is a word or phrase created by mixing up the letters of another word or phrase. For example, when you mix up the word “MARY,” you can create the word “ARMY.”

Unscramble the following words and phrases to find important words or phrases associated with what you have learned about hypothermia.

Example: “O! My hip earth!” contains all of the letters of the word “hypothermia.”

Five High Heat Loss Areas

Snare drum = _____

“Ha!” danced Ken = _____ and _____

Goddess in rain = _____ and _____

Five Ways Our Bodies Lose Heat

Toad in air = _____

Conic donut = _____

Convict one = _____

A senior trip = _____

Vote on a pair = _____

Hypothermia Prevention

Good! Use judgment. = _____

(Hint: Just switch the words around.)

The only garlic = _____

(Hint: A strategy for your primary shelter. First word rhymes with payer.)

Dodo footage = _____

(Hint: A way to generate heat. Rhymes with “Neat wood, dude.”)

Sty yard = _____

Hypothermia Anagrams

Five High Heat Loss Areas

Snare drum = underarms

“Ha!” danced Ken = head and neck

Goddess in rain = sides and groin

Five Ways Our Bodies Lose Heat

Toad in air = radiation

Conic donut = conduction

Convict one = convection

A senior trip = respiration

Vote on a pair = evaporation

Hypothermia Prevention

Good! Use judgment. = Use good judgment

The only garlic = Layer clothing

Dodo footage = Eat good food

Sty yard = Stay dry

Hypothermia Word Games

Time: 60 minutes

Overview

Use a crossword puzzle and a word search to practice and review hypothermia vocabulary.

Objectives

After completing this activity, students should be able to:

1. Define hypothermia.
2. List five ways your body loses heat.
3. List five high heat loss areas.
4. List three things that increase susceptibility to hypothermia.

5. List three signs and symptoms of mild hypothermia
6. List four signs and symptoms of severe hypothermia.
7. List three steps for treating hypothermia at all levels and one additional step for treating severe hypothermia.
8. List four actions to avoid when treating severe hypothermia

Materials

- One per student, Student Handouts #1 **Hypothermia Crossword Puzzle** and #2 **Hypothermia Word Search**

Procedure

1. Explain to students that they will be doing a crossword puzzle and word search to review hypothermia.
2. Review the definition and causes of hypothermia, the five ways you lose heat, the five high heat loss areas, and signs, symptoms, and treatment of hypothermia.
3. Distribute and have students complete Student Handouts #1 and #2.

This activity addresses Alaska Content Standards:

Language Arts A-6 Using visual communication, B-1 Meaning from written text, D-1-D Analyzing information

Science D-1, 3 Practical applications of scientific knowledge, D-6 Using reasoned decisions

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, B-1 Risk and consequence, D-2 Safe and healthy environments

Name: _____ Date: _____

Hypothermia Crossword Puzzle

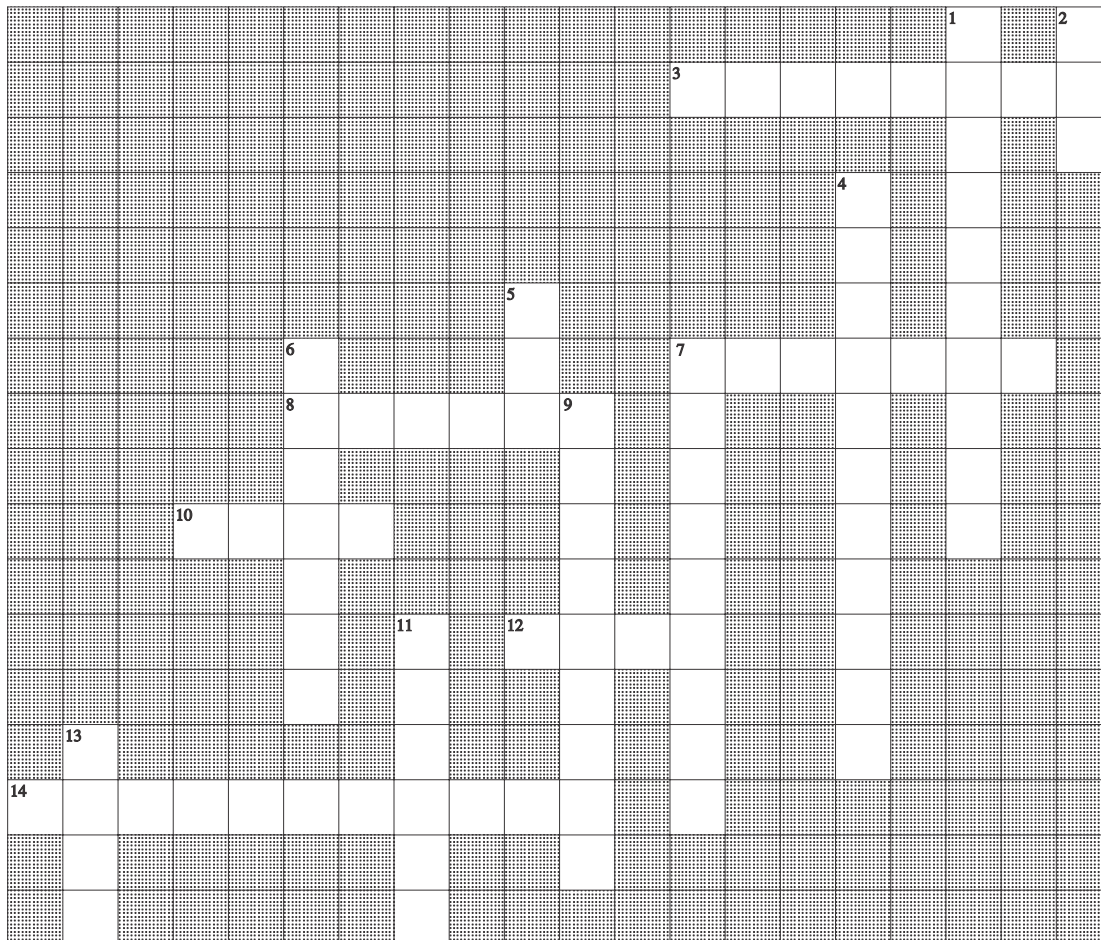
Across

- 3. _____ is susceptible to hypothermia
- 7. A high heat loss area
- 8. _____ of clothing should be worn to help prevent hypothermia
- 10. Your body uses it to generate heat
- 12. 50% of the body's heat can be lost through the _____
- 14. Heat loss from breathing

Down

- 1. When you come in contact with anything below your temperature, heat is lost through _____

- 2. Getting _____ increases the potential for becoming hypothermic
- 4. A sweaty person loses heat through _____
- 5. Treatment for severe hypothermia with no life signs
- 6. _____ can mask the signs of hypothermia
- 7. Continued decline in body temperature after a hypothermic victim is moved to a warm environment
- 9. An unreliable sign of hypothermia
- 11. A hypothermic person must be treated _____
- 13. A high heat loss area



Name: _____

Date: _____

Hypothermia Word Search

D E F V D F T V E V K O I S B F D I E Y R O E J P N I Z R A
I C S E V D B P U V Y T I M S G S N Z E D M D T C Y P Y C N
S B Z L V Y K R D H E E Q B U F Q A E E F O J X N N U G D A
O P C Y A Q Q I L V V R F H R G X Q P C O W K P P D T I N Q
R W K L T F D X F A S L Y M B W K R F F K C T U E V Y J Z T
I J V U H I L P P A Q F O O N E R C H Z C O C T B K M T N E
E W R A A K Y O L G U E C L N P Q D J I K L U B H Q X Y I Q
N R L L V W R C G I S M H S M E N H R X S Z C F T Z V X E P
T I L T M A F Q B L F G J A Z P V N C V Q Z P P Z K V M B G
A O T C T O O M C G K D Q M K H Z G C O K L R I R W D M V R
T B X I A L S K L Z S X T B V X D X K B G Z E B R V N O X H
I A O O L N V K V U E L T P C G L H D H S G C H N U X N Y H
O N F O C M F C G L K M I O V T K X I U W I W S Q N Z U Q C
N Q S G O G M N B M B K W R U H G T D O G W I N D C H I L L
X R Y O H B E B S F D Z S D B F D L V N F L Y F R L V F B G
T N P T O A I H N O H B L R F P V N I Z D P F C P F R I M Y
L E O L L H E A D R Q W X E A W U R U X S R E Y A L V B R K
B N E I P T V I Z B V S W T N G E G G U N Q U M Y Z Z N E N
V M R W T O L U C O R S N F R V D C N V S L K Q B B E Z O M T
B A C Z G C C L T A C Z U A I A S T E W F Z W G V R P D D E
C R S Z E C U O P K T B L H A P S O N G M C I Q C I Y L F P
I Q V R U M W D E S X O S J Q S B P T B G S T H V I F F P T
V U M C S V W H N X W H O S T U D T K P K G E P V V D Y I U
D S D N E S S X D O M Y C F K U S Y V Z B K H G I Y D Z A E
A Z B Y D J K Z Y C C A V M N V H T C K E O E J R F F N A U
Q V N K I N O I T A R I P S E R V M I Y J N R R M K Y R C W
V S I Q S N W I J C U V K U Q W T N J E T P V F O X W N O I
T T L H E Q L M F W D M I S G L V E L L P J A T H T Q U V D
L R K E G T B U E B E U L N C E A W Y C H Q L J M A N Q X P
O M P Z E N W E Y L T V O J X P J N V E D C W B U L B Y W K

1. Find and circle each of the following hypothermia words in the square of letters above. Words can be right to left, left to right, and diagonal.

Afterdrop

False

Respiration

Alcohol

Food

Shivering

Conduction

Gently

Sides

CPR

Head

Wet

Disorientation

Layers

Windchill

Evaporation

Low

Everyone

Neck

Origami Fact Catcher

Time: 15 minutes

Overview

Make a folded paper “catcher” and use it to review hypothermia and heat loss concepts.

Objectives

After completing this activity, students should be able to:

1. Define hypothermia.
2. List the five high heat loss areas.

3. List the body area that loses the most heat.
4. List three facts that you can use to help prevent hypothermia.
5. List two steps to take when treating hypothermia.

Materials

- One per student plus two extras, **Origami Fact Catcher** (make from Template #1)

Procedure

Before Class

1. Cut each template along dotted lines.
2. Make one Fact Catcher as an example for students.

During Class

1. Explain to students that they will be making a hypothermia fact catcher.
2. Distribute fact catchers to students. Keep one copy for yourself so you can make one along with them.
3. Instruct the students to start with the paper lying flat on their desks print side down. Fold the paper in half diagonally, corner to corner. Crease well. (Step 1; see illustration next page.)
4. Fold this large triangle in half, corner-to-corner, into a smaller triangle. Crease well. (Step 2.)
5. Completely unfold the paper back to the original square. It should look like a square with an X creased into it. The paper square must still lie on the desktop print side down.
6. Fold each of the four corners so they all meet in the middle at the center of the X. (You will create a smaller square.) Crease well. (Step 3.)
7. Turn the paper over so that the four flaps are facing down.
8. Fold each of the four corners of this smaller square into the middle. Crease well. (Step 4.)
9. Fold the paper in half, into a rectangle. Crease well. If you have completed all steps successfully to this point, all of the numbers should be showing on the outside of the rectangle. (Step 5.)
10. Fold this in half to make an even smaller square. Crease well. (Step 6.)
11. Unfold only the last two folds. (Step 7.)
12. Turn the paper over. It should have four square flaps on top.
13. Place the thumb and first three digits of your favorite hand under each flap.
14. Squeeze your thumb and fingers together and you have your Fact Catcher!

Using the Fact Catcher

Divide students into pairs. Students use their own Fact Catchers. Student A manipulates his/her Fact Catcher according to the steps below, and asks Student B a question. Student B answers the question and then, using the steps listed below, asks Student A the next question. Continue this procedure until all the questions are asked and answered.

- Student A puts all his/her fingertips together to close the Fact Catcher. This presents only numbers to the partner, Student B.
- Student B picks a number.
- Student A opens to show the topic associated with that number and shows the topic to Student B.

- Student A removes the Fact Catcher and opens the flap underneath the topic and reads the question directly below the topic to Student B.
- Student B answers the question correctly (or is assisted by Student A upon request).
- Student A puts the Fact Catcher back together again and the pair switches roles.
- This continues until all the numbers have been used.

Note: The treatment is in accordance with the *State of Alaska Cold Injuries and Cold Water Near-Drowning Guidelines*, revised January 1996. Compare it with your current state recommendations and adjust information as necessary.

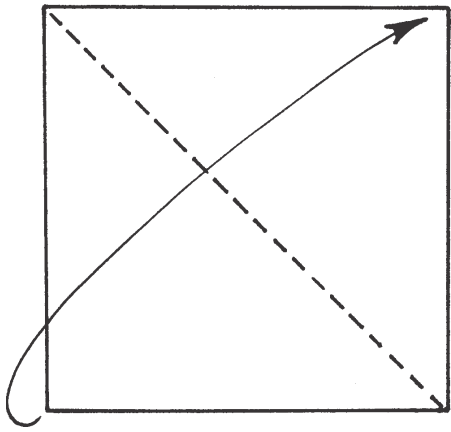
This activity addresses Alaska Content Standards:

Language Arts A-6 Using visual communication, B-1 Meaning from written text

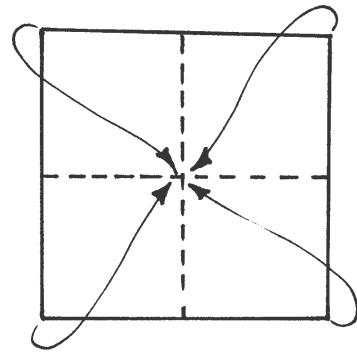
Mathematics A-5 Geometry

Science D-1, 3 Practical applications of scientific knowledge

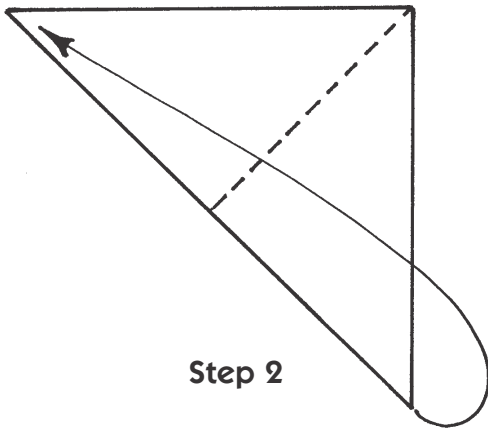
Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, B-1 Risk and consequence, D-2 Safe and healthy environments



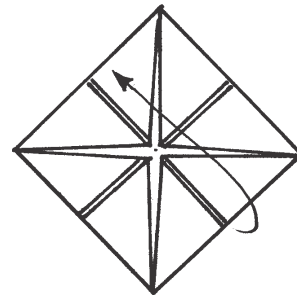
Step 1



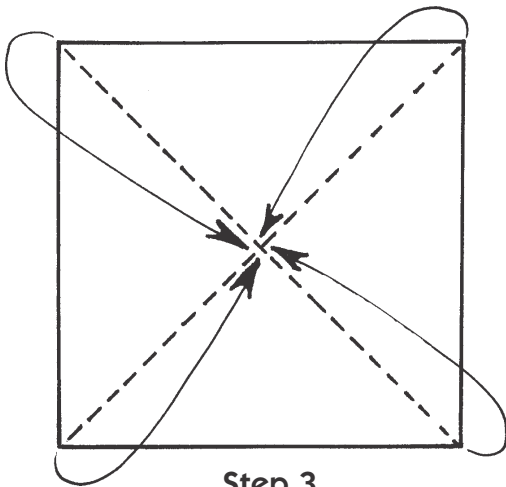
Step 4



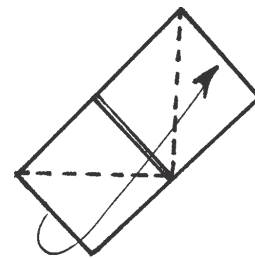
Step 2



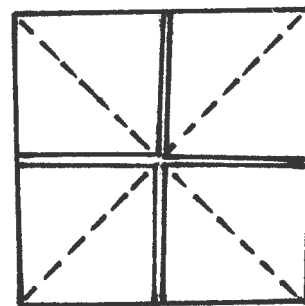
Step 5



Step 3



Step 6



Step 7

Origami Fact Catcher

8

7

Definition

T or F:
Hypothermia results when the body loses more heat than it produces?

8

The 1st step in treating a wet hypothermia victim is to...

Treatment

6

5

Definition

What is hypothermia?

Cooling of the body's core temperature.

True!

Place them gently into a warm dry place.

Treatment

Allow hypothermia victims to eat and drink only if...

they can feed themselves.

poor, good

insulator.

Wet cotton is a _____ insulator and wool is a _____ insulator.

Prevention

in layers.

head, neck, armpits, sides of chest, groin.

High Heat Loss

1

2

High Heat Loss


The 5 high heat loss areas are...

You can decrease heat loss by dressing...

Prevention

3

4





Unit 2: Personal Flotation Devices (PFDs)

Unit Rationale

The statistics are grim: Drowning is the second leading cause of death for children. U.S. Coast Guard statistics consistently show that at least 80% of the people who die in boating accidents nationwide are not wearing a PFD. In a U.S. Coast Guard study of boating fatalities in Alaska between 1996 and 1999, that rate was 58%.

PFDs save lives—over half of the people who drowned would have had a fighting chance of survival if they had worn a PFD—but PFDs are not consistently used. With education and training many water-related deaths can be prevented. The information in this unit can help save lives!

Unit Goal

To develop an understanding of ways that personal flotation devices help people and how important they are in saving lives in cold water survival situations and to provide an opportunity for each student to find a PFD they will wear.

Personal Flotation Devices: Teacher Information

The information in this section gives teachers a background in the topic. Use your judgment when presenting this material; some concepts may not be suitable for younger children.

Why Wear a Personal Flotation Device (PFD)?

- A. By definition, a PFD is a device that is used to keep a person afloat—it can save your life!
- B. Helps keep your airway out of the water
- C. Helps you when you can't help yourself if weak, uncoordinated, or incapacitated from hypothermia or other injury
- D. In the event of death, it allows searchers to find the drowned body, allowing closure for the family

PFDs Should Be Worn

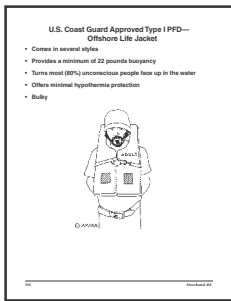
- A. In all open boats (put on before you leave the dock)
- B. When on deck on larger vessel
- C. When water skiing
- D. When on a personal water craft
- E. When crossing questionable ice
- F. By young children whenever near the water

General Properties of PFDs

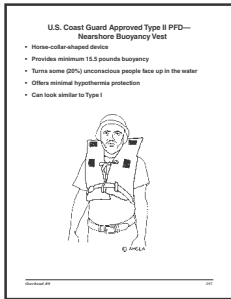
- PFDs are not toys!
- Inflatable beach toys and water wings are not PFDs!
- Buoyancy
- A. Based on Archimedes Principle = a body is buoyed by a force equal to the weight of the water it displaces (water weighs approximately 8.35 pounds per gallon)
- B. A body will sink if weight of immersed body is greater than weight of the water it displaces
- C. A body will float if weight of immersed body is less than weight of the water it displaces
- D. Extra pounds of buoyancy are needed to float a person
 1. Most people over 90 pounds require about 11 extra pounds of buoyancy
 2. People under 90 pounds require about 7 extra pounds of buoyancy
 3. This keeps your face barely above the water level
 4. In anything but calm water more flotation is essential

PFD Styles and Their Protection against Hypothermia

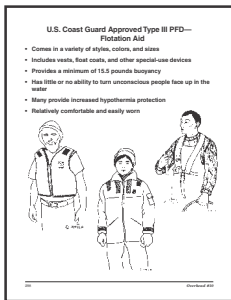
- If U.S. Coast Guard approved, approval number will be on tag on inside of garment-style PFDs or printed on throwable devices
- Minimum pounds of buoyancy listed below is for PFDs designed for people over 90 pounds unless otherwise stated



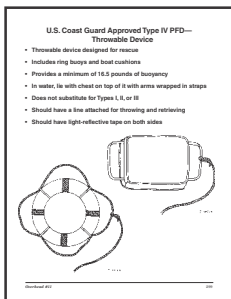
Overhead #8



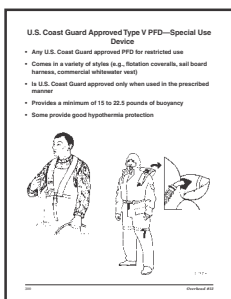
Overhead #9



Overhead #10

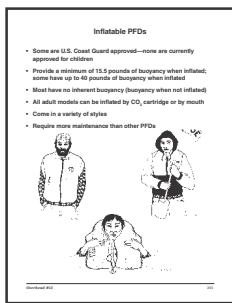


Overhead #11

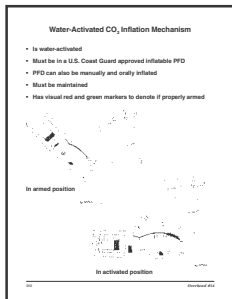


Overhead #12

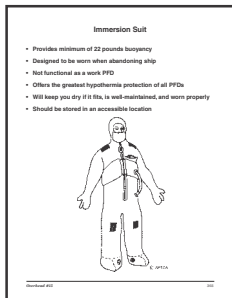
- A. U.S. Coast Guard approved Type I = Offshore Life Jackets (see Overhead #8)
 1. Come in several styles
 2. Provide a minimum of 22 pounds buoyancy
 3. Because most flotation is in chest area, it will turn most (80%) unconscious victims face up in the water unless worn over coveralls, a float coat, or an immersion suit
 4. Offer minimal hypothermia protection
 5. Bulky
- B. U.S. Coast Guard approved Type II = Nearshore Buoyancy Vests (see Overhead #9)
 1. Horse collar shaped device
 2. Provide a minimum of 15.5 pounds buoyancy
 3. Tend to turn some (20%) unconscious victims face up in the water
 4. Offer minimal hypothermia protection
 5. Can look similar to Type I
- C. U.S. Coast Guard approved Type III = Flotation Aids (see Overhead #10)
 1. Come in a variety of styles, colors, and sizes
 2. Include vests, float coats, and other special-use devices
 3. Provide a minimum of 15.5 pounds buoyancy
 4. Have little or no ability to turn unconscious victims face up in the water
 5. Many provide increased hypothermia protection
 - a. Float coat with beaver tail and hood protects all five high heat loss areas
 - b. Flotation coveralls (a Type III only if worn) with hood protect all five high heat loss areas
 6. Relatively comfortable and easily worn
- D. U.S. Coast Guard approved Type IV = Throwable Devices (see Overhead #11)
 1. Throwable devices designed for rescue
 2. Include ring buoys and seat cushions
 3. Provide a minimum of 16.5 pounds buoyancy
 4. In water, lie with chest on top of it with arms wrapped in straps
 5. Do not take the place of Type I, Type II, Type III, or Type V PFD (wearable PFDs)
 6. Should have a line attached for throwing and retrieving
 7. Should have light reflective tape on both sides
- E. U.S. Coast Guard approved Type V = Special Use Devices (see Overhead #12)
 1. Any U.S. Coast Guard approved PFD for restricted use
 2. Come in variety of styles (for example, flotation coveralls, sail board harness, commercial whitewater vest)
 3. U.S. Coast Guard approved only when used in prescribed manner
 4. Provide a minimum of 15.5 to 22 pounds of buoyancy



Overhead #13



Overhead #14



Overhead #15

5. Some provide good hypothermia protection
- F. Inflatable PFDs (see Overhead #13)
1. No inherent flotation
 2. Can be inflated orally
 3. Come in a variety of styles
 4. Offer minimal hypothermia protection
 5. Require more maintenance than other PFDs
 6. Some are U.S. Coast Guard approved
 - a. Type I inflatables
 - (1) Provide a minimum of 34 pounds buoyancy when inflated
 - (2) Have both manual and water-activated CO₂
 - (3) Water-activated mechanisms required to have visual red and green markers to denote if properly armed with CO₂ cartridge inflation (see Overhead #14)
 - b. Type II inflatables
 - (1) Provide a minimum of 34 pounds buoyancy when inflated
 - (2) Have only manual CO₂ inflation
 - c. Type III inflatables
 - (1) Provide a minimum of 22.5 pounds buoyancy when inflated
 - (2) Have only manual CO₂ inflation
 7. Some inflatables are not U.S. Coast Guard approved
 - a. Come in a variety of styles including suspenders, jackets, and vests
 - b. Most have minimum 15.5 pounds buoyancy when inflated; some have up to 40 pounds
 - c. Manual CO₂ inflation
 - d. Children's only inflatable by mouth and should be inflated completely before they go near the water
- G. Immersion suits (see Overhead #15)
1. Also called survival suits
 2. Can be U.S. Coast Guard approved or not approved
 3. Provide a minimum of 22 pounds buoyancy (minimum of 11 pounds buoyancy for people under 90 pounds)
 4. Keep you dry if they fit, are well-maintained, and worn properly
 5. Offer best hypothermia protection of any PFD
 6. Not functional as a work PFD
 7. Designed to be worn when abandoning ship
 8. Should be stored in accessible location

PFD Requirements

- A. Federal requirements
1. Boats less than 16 feet must have one Type I, II, III, or V PFD for each person aboard
 2. Boats greater than 16 feet must have one Type I, II, III, or V PFD for each person aboard and one Type IV

3. All PFDs must be
 - a. U.S. Coast Guard approved
 - b. In serviceable condition
 - c. Appropriately sized for wearer
 4. Wearable PFDs must be worn or readily accessible
 5. Throwable devices must be immediately accessible
 6. Functional waterproof lights should be attached to all PFDs if operating at night
 7. Some commercial fishing vessels have requirements for PFDs or immersion suits, depending on distance from shore and temperature of water
- B. State requirements
1. Vary from state to state; check with your state boating regulators for specifics
 2. Many states require children to wear PFDs
 - a. Required age limit varies
 - b. Required by Alaska law for children under age 13 in open boat or on deck

Personal Considerations for PFDs

The best PFD is the one you wear!

- A. Cost—wide range
- B. Color—bright colors facilitate rescue
- C. Suitability for your activities and area of operation
- D. Add items to maximize safety—lights, sound signals, personal survival kit (See Volume 4: *Small Boat Safety and Survival*, Unit 1: Preparing for a Boat Trip for more information on personal survival kits)
- E. Reflective tape should be above anticipated water line
- F. Grab loops on the back of children’s PFDs make it easier to get them out of the water if they fall in
- G. Read PFD information pamphlet and try on PFD before you buy to ensure you get what you need

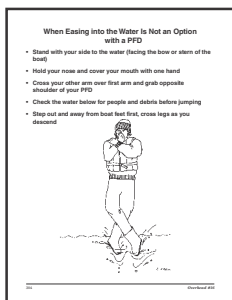
PFD Use

Sizing, fitting, and wearing

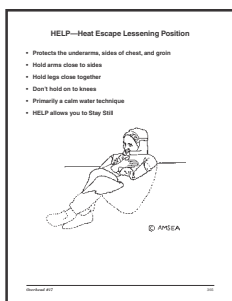
- A. PFDs come in infant to XXXL adult sizes—you must have properly sized PFDs for all people on board
- B. Your PFD should fit securely (feel snug)—tie straps from chin down, zip all zippers, secure all straps and other closures
- C. A properly fitted PFD supports you and does not ride up around your neck when worn in the water
- D. An improperly fitted PFD can slide off in the water or ride up and cover airway
- E. Accessible location is critical—wearing a PFD is best!

Entering the water while wearing a PFD

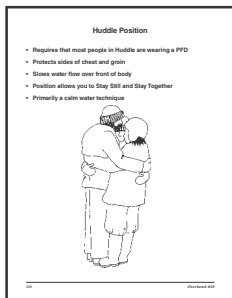
- A. Best to slip in slowly to minimize wetness and shock of cold water
- B. If you have to jump into the water (see Overhead #16)
 1. Stand sideways to dock, or facing bow or stern of boat
 2. With one hand, hold your nose and cover your mouth
 3. Cross your other arm over first arm and grab opposite shoulder of your PFD
 4. Before jumping, check the water for debris and people
 5. Step far away from boat and cross your legs as you fall
 6. Be sure your head does not hit the dock or boat
 7. Jumping is not appropriate for children to practice except in very controlled situations



Overhead #16



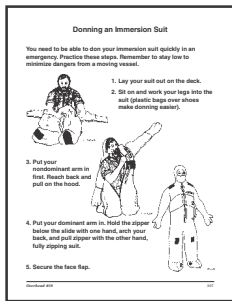
Overhead #17



Overhead #18

Use in the water

- A. HELP (Heat Escape Lessening Position) slows progression of hypothermia (see Overhead #17)
 1. If not wearing a PFD, HELP cannot be maintained for more than a few minutes
 2. Always apply principle of protecting your high heat loss areas
 3. Float tipped on your back
 4. Hold inner sides of your arms tight against sides of your chest to protect underarms and sides
 5. Bend your knees and pull up your legs as much as possible to protect groin
 6. Use head to help balance—difficult to maintain balance in rough water
- B. Huddle position (see Overhead #18)
 1. Requires that most people in Huddle be wearing a PFD
 2. Assemble in groups of at least 3 people
 3. Form circular “huddles” with arms around each other’s waists
 4. Shoulders and sides close together slows down water movement within Huddle
 5. Bodies work together to protect high heat loss areas
 6. Small children or people with inadequate flotation can huddle inside circle of adults if held up
 7. Difficult to maintain in rough water
- C. Survival swimming to floating objects
 1. On back
 2. Upper arms held near sides of your chest, swim with forearms to protect high heat loss areas
 3. Use small kicks
 4. Note: Swimming increases heat loss by more than 30%, but sometimes swimming short distances may be necessary to reach assistance (life ring, overturned boat, floating debris)



Overhead #19

Immersion suits

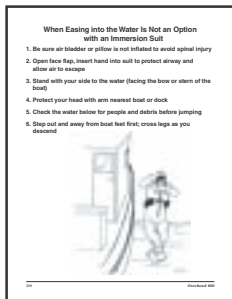
A. Proper donning of an immersion suit (see Overhead #19)

1. On deck
 - a. Keep clothes and boots on (or put boots inside suit before zipping)
 - b. Lay suit on floor or deck, spread open
 - c. Sit down on inside of suit—vessel movement or list makes donning an immersion suit while standing hazardous
 - d. Slide both legs into suit and work feet all the way to bottom (placing plastic bags over boots or shoes makes this step much easier)
 - e. Place nondominant arm in suit first
 - f. Pull hood on with dominant arm while it is still out of suit
 - g. Place dominant arm in suit
 - h. Grasp below zipper with one hand, grasp toggle attached to zipper with other hand, arch back, and fully zip suit with a long, smooth pull
 - i. Close face flap

2. In the water—difficult but possible; always better to don suit dry

B. Entering deep water in immersion suit

1. If possible, slip slowly into water, trying to keep face dry
2. From a height (see Overhead #20)
 - a. To prevent neck injury and/or damage to zipper, do not inflate air bladder before jumping into the water
 - b. Open face flap, insert hand into suit to protect airway and allow air to escape
 - c. Stand sideways to dock or boat
 - d. Protect head with arm nearest boat or dock
 - e. Check the water below for debris and people before jumping
 - f. Step away from boat or dock and cross legs as you descend into the water



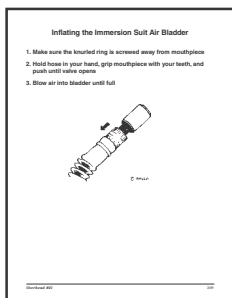
Overhead #20

C. In the water

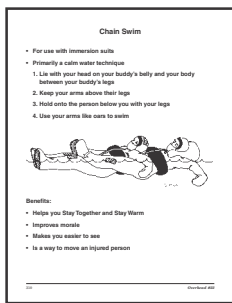
1. Float on back; if float on front, water will almost certainly enter suit
2. Inflate flotation pillow or bladder (see Overhead #21)
3. Zip up face flap if not done before entering water
4. Activate light
5. Immersion suits will float even if full of water
 - a. This makes exit from the water more difficult
 - b. This increases heat loss, thereby decreasing survival time

D. Swimming techniques

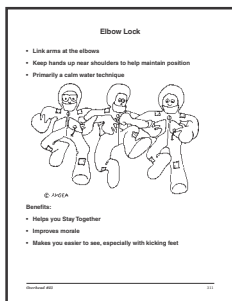
1. Individual swimming
 - a. On back is safest
 - b. Always protect airway, especially in rough seas
 - c. Most efficient propulsion is with arms; legs are less effective



Overhead #21



Overhead #22



Overhead #23

2. Tandem or chain swimming (see Overhead #22)
 - a. Line up with head on buddy's torso area, body between buddy's legs
 - b. Hold onto one another with pressure from legs
 - c. Use arms like oars to swim
 - d. Is more effective than single swimming and keeps people together
 - e. May not be possible in rough seas
3. Elbow lock (see Overhead #23)
 - a. Helps people stay together in water
 - b. Kicking while in elbow lock will make a signal
 - c. Difficult to maintain in rough water
4. Putting small children on an adult helps children

Floating without a PFD or additional flotation devices

- A. Is difficult, especially in rough seas
- B. Trapped air in clothing aids flotation
- C. Button or secure wrists, ankles, and neck of clothing to trap as much air as possible
- D. Periodically blow additional air into neck or chest areas of shirt
- E. Stay as still as possible
- F. It's much better to have a PFD on

Heavy clothes or boots

- A. Will not cause you to sink
- B. Most clothing is neutrally buoyant in water
- C. Weight of wet clothing only becomes a factor when removed from the water or if you try to swim
- D. Belt waders so current doesn't catch them like a parachute

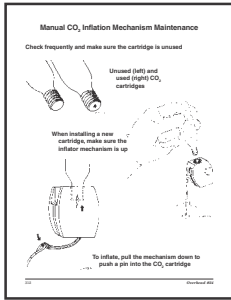
PFD Care and Maintenance

- PFD manufacturers can provide a list of factory authorized repair stations
 - Sitting on PFDs can damage them
 - All PFDs should be checked for serviceability with every boat use
- A. Check for tears
 - B. Check straps, reflective tape, and zippers for operability and wear
 - C. Check fit for growing children
 - D. Check kapok PFDs frequently for leaks (kapok is a plant fiber used as an inexpensive filler in some PFDs)
 1. Kapok must be contained in watertight plastic to prevent absorption of water
 2. These PFDs feel heavy when kapok has absorbed water
 3. Test by squeezing
 - a. Listen for sound of air being forced out of flotation bag
 - b. If air is forced out, discard PFD

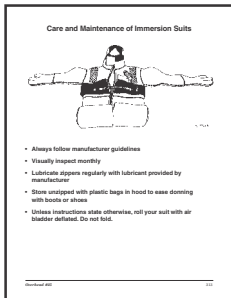
- E. Check foam PFDs for compression—compression decreases buoyancy
- F. Keep PFDs clean and out of the sun—ultraviolet light, dirt, oil, grease, and moisture degrade PFDs; wash with mild soap if dirty
- G. Check waterproof lights for function and current date
- H. If used in salt or pool water, rinse well with fresh water, dry inside out away from sun, then turn

Inflatable PFDs

- A. Be especially careful with inflation mechanisms
- B. Follow manufacturer’s guidelines
- C. Manual CO₂ inflation mechanisms (see Overhead #24)
 - 1. Replace “fired” cartridges (have hole in top) with same size cartridge
 - 2. Be sure cartridge is completely screwed into mechanism
- D. Water-activated CO₂ mechanism—replace white dissolving “pill” if pitted, or once a year if not pitted
- E. Check air bladder for leaks
 - 1. Leave inflated overnight
 - 2. Replace bladder if it leaks



Overhead #24



Overhead #25

Immersion suits (see Overhead #25)

- A. Follow manufacturer’s maintenance guidelines
- B. Inspect monthly
 - 1. Look for holes, tears, and compression wrinkles
 - 2. Inspect zipper for smooth operation and corrosion (green)
 - a. If dirt or residue present, scrub with bare toothbrush
 - b. Remove corrosion by scrubbing with a paste of baking soda and water, then rinsing with fresh water
 - c. Lubricate zipper inside and out with lubricant provided by manufacturer
 - 3. Inspect seams, buoyancy rings, and foot valves for leaks
 - 4. Inspect reflective tape—reglue loose edges, replace yellowed tape
 - 5. Inspect valves and hoses attached to pillow/buoyancy ring
 - a. Inflate and leave overnight to check for leaks
 - b. Make sure locking ring of inflation hose is left in open position
 - 6. Test attached lights for function and current date; replace as needed
- C. After use, rinse inside and out, then dry thoroughly before storing
- D. Store unzipped
- E. Unless instructions state otherwise, roll suit from feet to head before putting in bag—avoid folding
- F. Put plastic bags in suit’s hood to ease donning with boots or shoes
- G. Check storage bag’s closures and general condition of bag to ensure ease of suit removal

PFD Storage

- A. In a dry place on boat, readily accessible for wear or emergency use
- B. In a dry place at home during off-season
- C. Avoid storing where sharp or heavy objects might cause damage
- D. Immersion suit bags should be easily identifiable for their wearer; most sizes fit in same color bags

PFDs: Activities Guide

- The activities in this volume are sequential and each unit assumes knowledge of the material in the preceding unit.
- Activities are arranged by topic in the same order as the Teacher Information.
- Within a topic activities are organized from easiest to most difficult.
- Detailed Alaska Content Standards are located at the end of each activity's procedures.
- Times needed for activities are approximate.
- Many activities contain true stories; be sensitive to the possibility that they could be written about your students' relatives or friends.
- **AMSEA** This symbol means the equipment or material is available to borrow from AMSEA.

Topics: Why Wear a PFD?, PFDs Should Be Worn, General Properties of PFDs

Activity	Objectives	Standards
1. Your PFD Use reading and handouts to learn about PFDs p. 116	<ul style="list-style-type: none"> • Define PFD • List two places where a PFD should be worn • State the legal requirement for wearing PFDs • Identify two different types of PFDs that may keep your head out of water; three PFDs that can keep you warm, one inflatable PFD, two inflatables that are not PFDs, and two throwing devices 	Language Arts Science Skills for a Healthy Life
2. PFDs and Archimedes Submerge a PFD in water p. 124	<ul style="list-style-type: none"> • Define PFD • Demonstrate buoyancy 	Mathematics Science Skills for a Healthy Life
3. Where Do You Wear a PFD? Worksheet and discussion about PFD decisions p. 129	<ul style="list-style-type: none"> • Identify 27 places where children should wear a PFD 	Language Arts Science Skills for a Healthy Life

Topics: PFD Styles and Their Protection against Hypothermia, PFD Requirements, Personal Considerations for PFDs

Activity	Objectives	Standards
<p>4. The PFD Game Don PFDs and play matching game p. 132</p>	<ul style="list-style-type: none"> • Properly don and describe the best use for five PFDs 	<p>Language Arts Science Skills for a Healthy Life</p>
<p>5. Sell That PFD! Use video footage and student presentations p. 134</p>	<ul style="list-style-type: none"> • Determine whether a PFD is U.S. Coast Guard approved • Identify Type I-Type V PFDs • Demonstrate how to don and fit a PFD • Describe the strengths and weaknesses of six different kinds of PFDs 	<p>Language Arts Science Skills for a Healthy Life</p>
<p>6. Why Wear PFDs? Practice decision making and refusal skills using video footage, graphs, and field observations p. 137</p>	<ul style="list-style-type: none"> • Analyze the pros and cons of wearing a PFD when on the water • Identify at least two steps to take to avoid drowning • Endorse the choice of wearing a PFD when on the water • Identify an appropriate place to store PFDs on a vessel • Practice refusing to participate in a dangerous situation 	<p>Language Arts Mathematics Science Geography Skills for a Healthy Life</p>

Topic: PFD Use

Activity	Objectives	Standards
<p>7. Don That Immersion Suit! Practice donning immersion suits in classroom p. 157</p>	<ul style="list-style-type: none"> • Demonstrate proper technique in donning an immersion suit • Demonstrate proper lubrication of an immersion suit zipper 	<p>Language Arts Science Skills for a Healthy Life</p>

Topic: PFD Care and Maintenance

Activity	Objectives	Standards
8. What Is Wrong with These PFDs? Evaluate an assortment of PFDs p. 158	<ul style="list-style-type: none">• List PFDs in good condition, PFDs needing maintenance, and PFDs that are no longer serviceable• List critical features of a functional PFD	Language Arts Mathematics Science Skills for a Healthy Life
9. Inspecting PFDs Inspect and maintain PFDs p. 161	<ul style="list-style-type: none">• Identify at least two steps to properly maintain a PFD• Demonstrate at least five steps to maintain an immersion suit	Language Arts Science Skills for a Healthy Life

Topic: PFD Storage

Activity	Objectives	Standards
10. Storing Immersion Suits Practice retrieving and donning immersion suits p. 164	<ul style="list-style-type: none">• List two considerations when storing an immersion suit• Don an immersion suit	Language Arts Science Skills for a Healthy Life

Your PFD

Time: 30 minutes

Overview

Use worksheets to learn about PFDs.

Objectives

After completing this activity, students should be able to:

1. Define PFD.
2. List two places where a PFD should be worn.
3. State the legal requirement for wearing a PFD.
4. Identify two different types of PFDs that may keep their faces out of the water if unconscious.
5. Identify three PFDs that can keep them warm.
6. Identify one inflatable PFD.

7. Identify two inflatable devices that are not PFDs.
8. Identify two throwing devices.

Materials

- One per student, Student Handouts #1 **Your PFD**, #2 **Faces Up**, #3 **PFDs That Keep You Warm**, #4 **The Warmest PFD**, #5 **Inflatable PFDs**, and #6 **Throwable PFDs**
- Overheads #8 **Type I PFD**, #9 **Type II PFD**, #10 **Type III PFD**, #11 **Type IV PFD**, #12 **Type V PFD**, #13 **Inflatable PFDs**, and #15 **Immersion Suits**
- Variety of PFDs (at least one should have the minimum buoyancy on the label)—Type I, Type II, float coat, flotation coveralls, inflatable jacket, Type IV cushion and ring, and beach toy **AMSEA**
- Optional—coloring pens, markers, crayons

Procedure

Part 1

1. Write the letters “P,” “F,” and “D” on the board. Show an example of a PFD and ask students to guess what the letters stand for. Write the correct words as they are suggested (you may need to tell the students).
2. Discuss appropriate places to wear a PFD and the legal requirement for wearing a PFD in your area.
3. Distribute and have students complete Student Handout #1.

Part 2

1. Explain to students that they will be learning about a variety of personal flotation devices.
2. Explain that there are many different kinds of PFDs. Show them Overheads #8 through #13, and #15 and/or examples.
3. Distribute and have students complete Student Handouts #2 through #6. Coloring them is optional.
4. When handouts are complete, discuss PFD types, PFDs students own, and which they prefer.

This activity addresses Alaska Content Standards:

Language Arts A-2 Writing conventions, B-1 Meaning from oral and visual text, D-1-A Personal experience and prior knowledge

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed decisions

Science D-1, 3 Practical applications of scientific knowledge

Part 1 is a variation of an activity submitted by Sitka, Alaska, school district teachers Sherry Foster and Margie Esquiro.

Name: _____ Date: _____

Your PFD

Using the words from the list below, fill in the blanks. Each word is used only once.

PFD stands for _____
_____.

I should wear my PFD when I am on a _____ or _____.

If I fall into the _____, my PFD will help me _____.

Other names for PFDs are _____ and
_____.



float

water

dock

life jackets

personal

boat

flotation

float coats

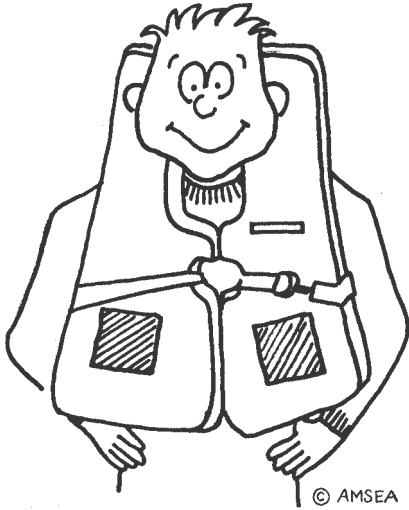
device

Name: _____

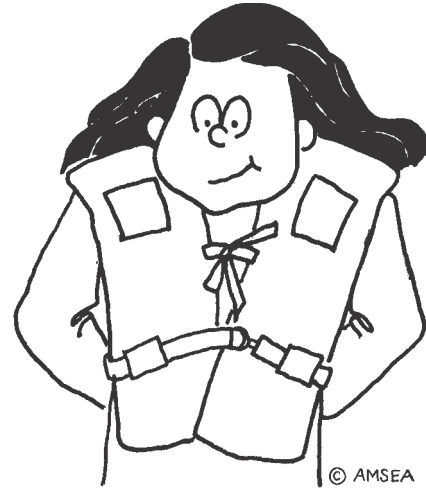
Date: _____

Faces Up

Some PFDs help you float face up.



This PFD floats most people face up.



This PFD floats a few people face up.

Where do you think people wear these kinds of PFDs?

These types of PFDs are often bright orange. Why do you think this is a good color to wear in or near the water?

Color the PFDs in the pictures orange.

Name: _____ Date: _____

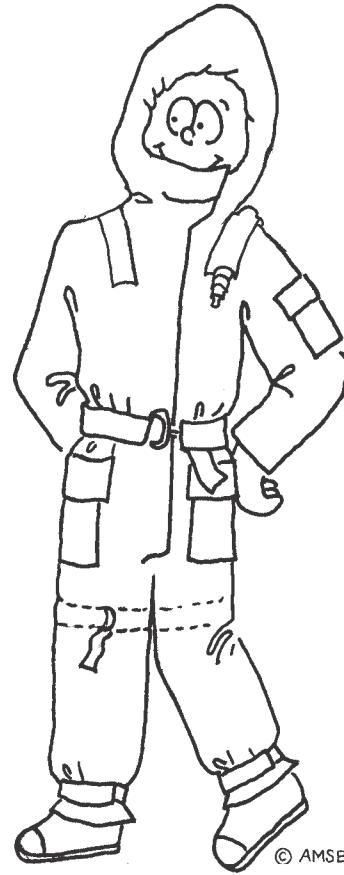
PFDs That Keep You Warm

These PFDs will help keep you warm on your boat and in the water. Always wear them when you are on a boat or dock. They are comfortable to wear when you work.



© AMSEA

This PFD is called a float coat.



© AMSEA

This PFD is called a float suit or coveralls.

Who might wear these kinds of PFD?

Color these PFDs orange or another bright color.

Name: _____ Date: _____

The Warmest PFD

This PFD is called an immersion suit. It is the warmest and driest PFD—if it fits you. It does not work well if it is too large.

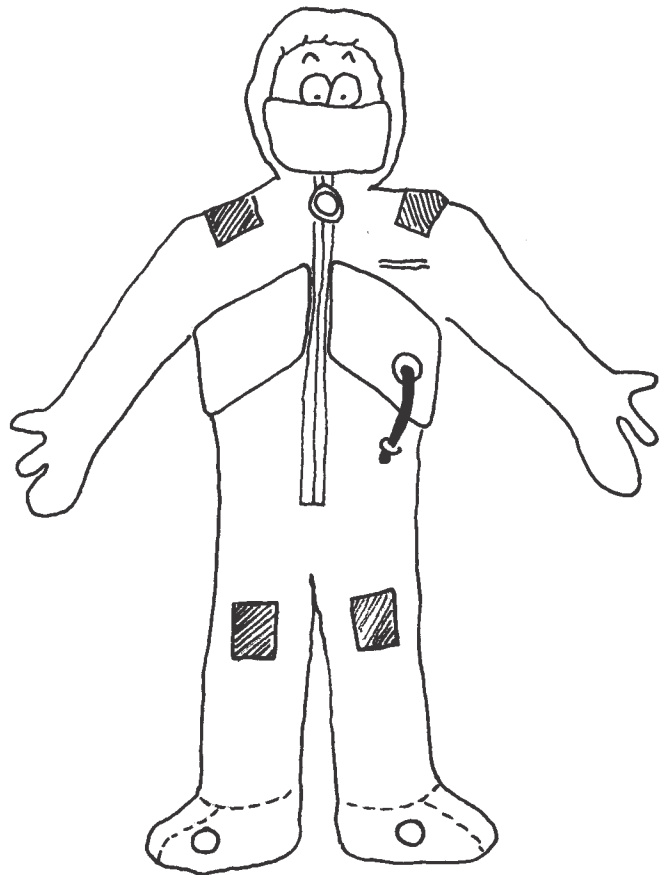
The suit is very warm and bulky.

Most people do not wear it while on a boat or dock. They keep it nearby to put on in an emergency.

List some emergencies when an immersion suit would be useful.

Have you ever seen an immersion suit? Where?

Color this suit orange.



© AMSEA

Name: _____ Date: _____

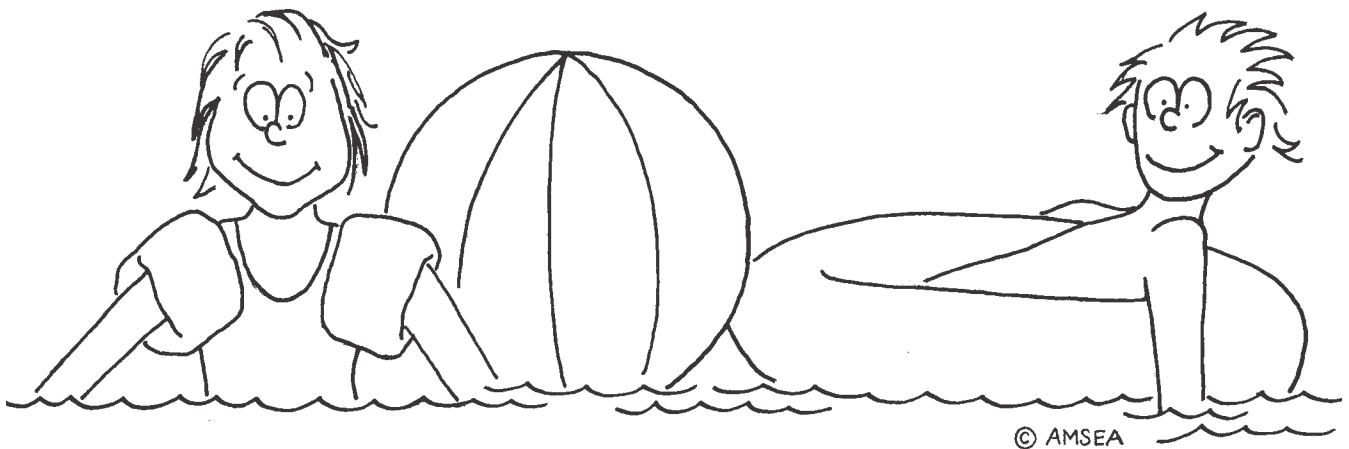
Inflatable PFDs

Some PFDs will help you float only after you have filled them with air.

If you have this type of PFD should you inflate it before going near the water? Why or why not?



Inflatable beach toys and water wings are fun and can help you float while you are playing in the water, but they are not PFDs.

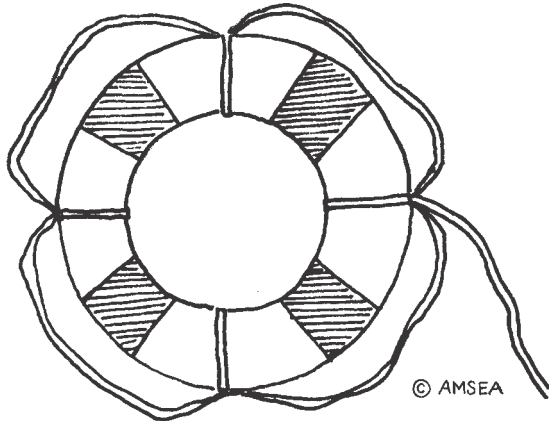


Name: _____

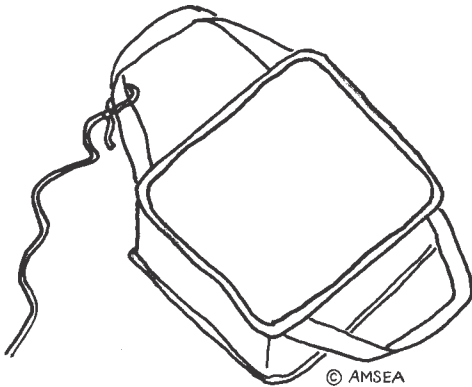
Date: _____

Throwable PFDs

These PFDs are thrown to people in the water.



LIFE RING



CUSHION

List some good places to have these kinds of PFDs.

PFDs for Warm Days

This PFD floats you and is comfortable on warm days.

Color this PFD so it can be easily seen.



c AMSEA

FLOTATION VEST

PFDs and Archimedes

Time: 30-45 minutes

Overview

Submerge a PFD in a tub of water to explore buoyancy.

Objectives

After completing this activity, students should be able to:

1. Define PFD.
2. Demonstrate how buoyancy works.

Materials

- Straight-sided tub that can hold about 15 gallons of water
- PFD that would fit most students
- Bathroom scale
- Water
- Gallon milk jug or other device for measuring liquids
- One per student, Student Handouts #1 **How Much Water Does It Displace?** and #2 **Buoyancy**

Procedure

Before Class

1. Fill the tub about half full of water and mark the water level.

During Class

1. Explain to students that they will be demonstrating how buoyancy works.
2. Discuss the definition of PFD and its purpose.
3. Distribute Student Handout #1.
4. Totally submerge the PFD in the tub without submerging hands or arms. Mark the new water level. Remove the PFD.

5. Measure the number of gallons of water that it takes to get to the new water level.
6. Have students complete Student Handout #1.
7. Explain to students that this is the meaning of the buoyancy number on PFDs. If the number is different, brainstorm reasons why this might be the case.
8. Distribute and have students complete Student Handout #2.

Variations

1. Have students figure out how to demonstrate Archimedes' principle.
2. Do the experiment with several different PFDs.

This activity addresses Alaska Content Standards:

Mathematics A-2 Selecting and using appropriate units and tools of measurement, A-3 Arithmetic and computation, B-1 Computation as problem solving, D-2 Drawing logical conclusions, E-2 Mathematics in daily life

Science B-1 Use the processes of science, C-2 Knowledge through experimentation,

D-1, 3 Practical applications of scientific knowledge

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention

Name: _____ Date: _____

How Much Water Does It Displace?

1. What is the minimum buoyancy stated on the PFD label?
2. How many gallons of water did it take to fill the tub to the second mark?
3. How much does a gallon of water weigh?
4. How much does the amount of water noted in question 2 weigh?
5. Does the weight calculated in question 4 equal the minimum buoyancy stated on the PFD label? If not, why not?

Name: _____ Date: _____

Buoyancy

Read the following section, adapted from an article found on the U.S. Coast Guard's Web site, then answer the questions below.

Buoyancy = The tendency of a body to float or sink in water or any other fluid. Most people will naturally float in water, especially if they fill their lungs with air. Most [adults] require only about 11 pounds of extra buoyancy to keep their heads out of water. That is why a PFD with just 15.5 pounds of buoyancy can provide adequate flotation for an adult—even a very large person. PFDs with 22 to 34 pounds can provide superior performance.

In technical terms, buoyancy is determined by Archimedes' Principle: Any body partially or completely submerged in a fluid is buoyed up by a force equal to the weight of the fluid displaced by the body. That means someone immersed in water is "buoyed" upward by a force equal to the weight of the volume of water that his/her

body takes up (displaces). Gravity pulls a person's body downward by a force equal to his/her weight. The difference between these forces is a person's net buoyancy. A PFD is very lightweight, but displaces enough water to make the PFD and the person wearing it very buoyant.

It also follows that the people hardest to float are those with compact, dense bodies. These tend to be people with athletic body builds, with a lot of bone and muscle mass, and not much fat. Fat is not as dense as muscle and bone, so people who are overweight can actually be easier to float than someone who is much smaller and leaner. Heavy people do not need higher buoyancy PFD because of their weight.

1. In your own words describe what buoyancy means.

2. How many pounds of extra buoyancy are needed to keep an adult's head out of the water?

3. Why would the PFD we submerged in the tub of water float you?

How Much Water Does It Displace?

1. What is the buoyancy stated on the PFD label?
Read the minimum buoyancy on the label. For this example, say the PFD has a minimum buoyancy of 15.5 pounds.
2. How many gallons of water did it take to fill the tub to the second mark?
About 1.9 gallons of water for a PFD with 15.5 pounds of buoyancy.
3. How much does a gallon of water weigh?
About 8.35 pounds
4. How much does the amount of water noted in question 2 weigh?
15.5 pounds
5. Does the weight calculated in question 4 equal the buoyancy stated on the PFD label? If not, why not?
Yes. But the answer could as easily be no as a result of the following variables.
 - a. The buoyancy stated on the label is a minimum buoyancy, so the PFD may actually displace more water, making the calculated buoyancy higher.*
 - b. Starting and/or ending water levels could be inaccurately measured.*
 - c. Submersion of hands would increase the calculated buoyancy.*
 - d. Incomplete submersion of the PFD would decrease the calculated buoyancy.*

Buoyancy

1. In your own words, describe what buoyancy means.

Anything immersed in water is “buoyed” upward by a force equal to the weight of the volume of water that it takes up (displaces). Gravity pulls an object downward by a force equal to its weight. The difference between these forces is buoyancy.

2. How many pounds of buoyancy are needed to keep an adult’s head out of the water?

11 pounds for most

3. Why would the PFD we submerged in the tub of water float you?

It provides the buoyancy needed (11 pounds) to float an adult body, plus additional buoyancy that will help keep the person’s head higher above the level of the water.

Where Do You Wear a PFD?

Time: 15-20 minutes

Overview

Make decisions about where to wear PFDs using a worksheet and discussion.

Objective

After completing this activity, students should be able to identify 27 appropriate places to wear a PFD.

Materials

- One per student, Student Handout #1 **Where Do You Wear a PFD?**

Procedure

1. Explain to students that they will be identifying places where PFDs should be worn.
2. Review what a PFD is.
3. Distribute and have students complete Student Handout #1.
4. Discuss where students should wear PFDs locally.

Note: This activity can be used as homework.

This activity addresses Alaska Content Standards:

Language Arts B-1 Meaning from oral and visual text, D-1-A Personal experience and prior knowledge, D-2 Evaluating information

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed decisions

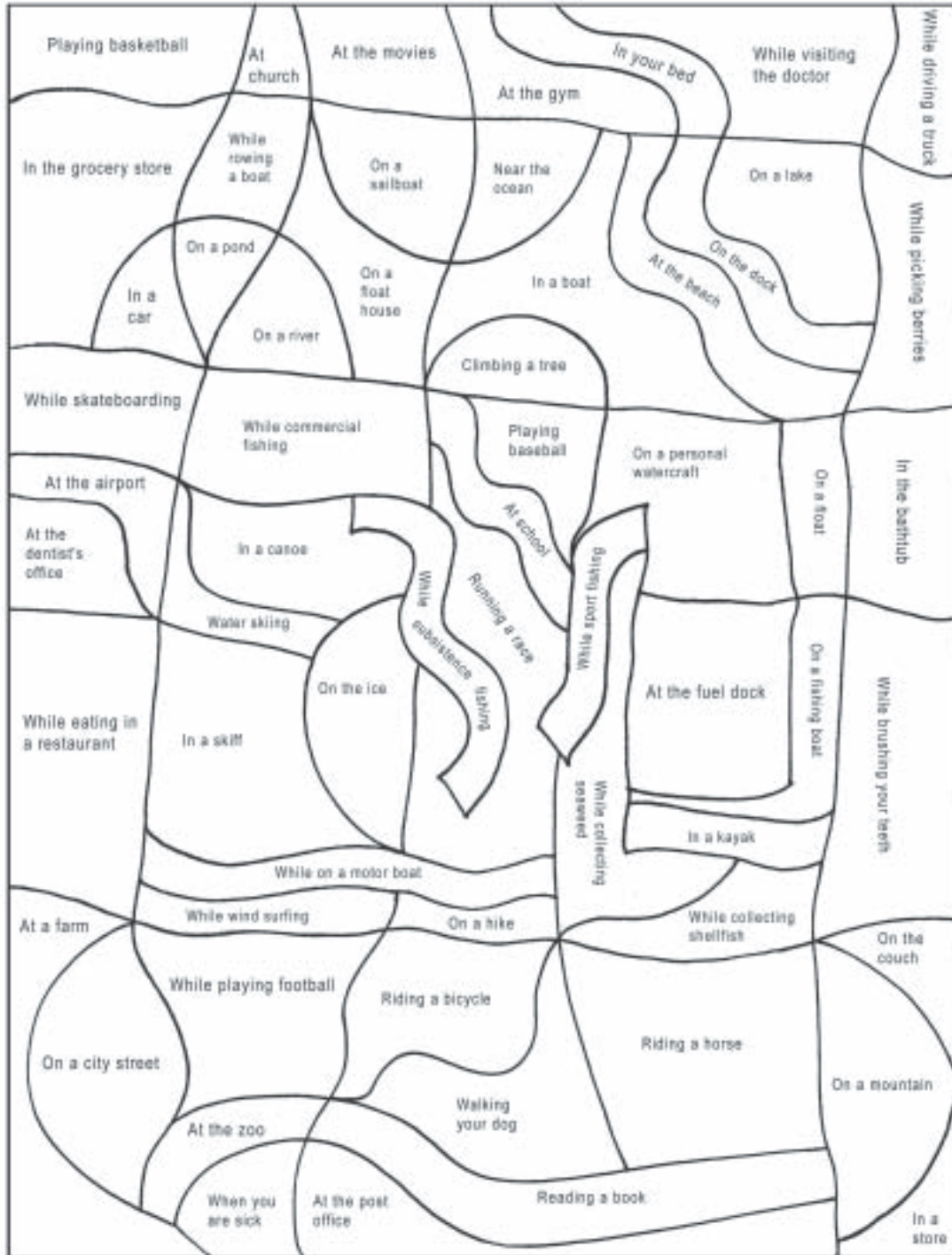
Science D-1, 3 Practical applications of scientific knowledge

Name: _____

Date: _____

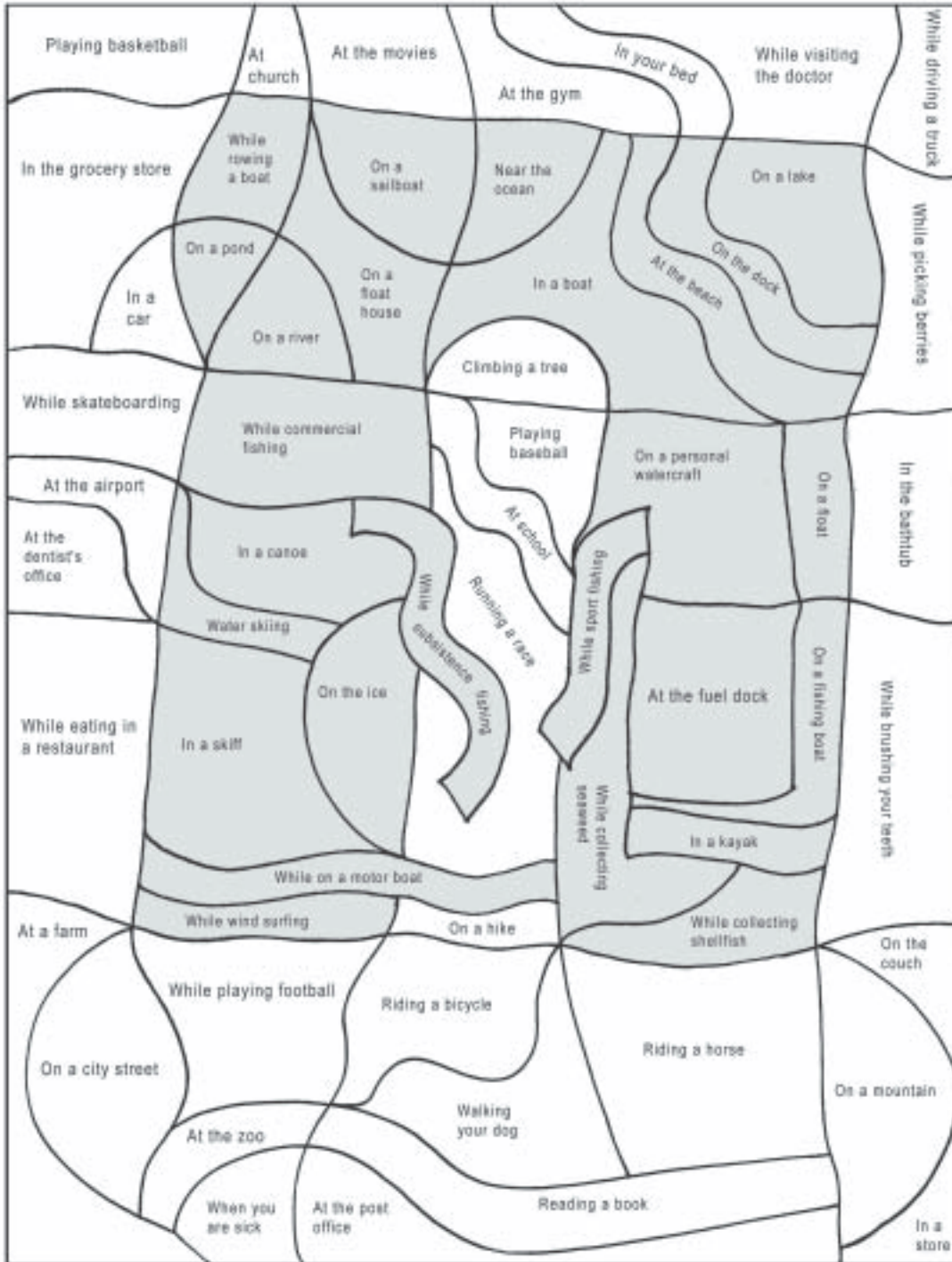
Where Do You Wear a PFD?

Color the shapes that name places where you should wear a PFD.



Where Do You Wear a PFD?

Color the shapes that name places where you should wear a PFD.



The PFD Game

Time: 30-45 minutes

Overview

Don a variety of PFDs and use cards to match PFDs with descriptions.

Objective

After completing this activity, students should be able to properly don and describe the best use for five PFDs.

Materials

- Examples of as many different kinds of PFDs as you can get ([AMSEA](#))
- Set of **PFD Game cards** (make from Template #1)

Procedure

Before Class

1. Place the PFDs in an accessible location in the classroom.

During Class

1. Explain to students that they will be identifying and donning PFDs suited for various uses.
2. Review the definition of PFD.

3. Play the **PFD Game** by having students pick a **PFD Game** card and follow the directions on it. Students then explain their choices to the class. Continue playing until each student has had a chance to don several different PFDs and all cards have been used.

This activity addresses Alaska Content Standards:

Language Arts B-1 Meaning from written, oral, and visual text

Science D-1, 3 Practical applications of scientific knowledge

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed decisions, B-1 Risk and consequences, B-5 Evaluating information, D-1 Responsible decisions

PFD Game Cards

Find and don a PFD that fits you and that may float you face up in the water.	Find and don a PFD that fits you and that you could wear in a skiff or kayak.	Find and don a PFD that fits you and that is most easily seen.
Find and don a PFD that fits you and that you think is uncomfortable. Tell why you think this is.	Find and don a PFD that fits you and that covers all your high heat loss areas.	Find and don a PFD that doesn't fit you.
Find and don a PFD that fits you and that will keep you the warmest.	Find and don a PFD that fits you and that you could wear working on the deck of a fishing boat.	Find and don an inflatable PFD that fits you. Look at the label. Is it U.S. Coast Guard approved?
Find and don a PFD that fits you and that would not be easy to see in the water.	Find and don a PFD that fits you and that you think is the best. Tell why you think it is.	Find and don a PFD that fits you and that covers only one high heat loss area.
Find and don a PFD that fits you and that you think is very comfortable. Tell why you think this is.	Find and don a PFD that fits you and that you would wear while walking or working on a dock.	

Sell That PFD!

Time: 75-90 minutes including video

Overview

Use a video and student presentations to explore strengths and weaknesses of PFD styles.

Objectives

After completing this activity, students should be able to:

1. Determine whether a PFD is U.S. Coast Guard approved.
2. Identify a Type I, II, III, IV, and V PFD.
3. Demonstrate how to don and fit a PFD.

4. Describe the strengths and weaknesses of various PFDs.

Materials

- Selection of U.S. Coast Guard approved and nonapproved PFDs ([AMSEA](#)), and nonapproved throwable devices
- Set of **PFD Search cards** matched to the PFDs you have (make from Template #1)
- Overheads #14 **Water-Activated CO₂ Inflation Mechanism** and #24 **Manual CO₂ Inflation Mechanism Maintenance**
- Optional—*Adventures in Boating* (30 minutes) or *It Could Have Been Prevented* video (17 minutes) ([AMSEA](#))

Procedure

Before Class

1. Make a pile of approved and nonapproved PFDs, and nonapproved throwable devices.

During Class

1. Explain to students that they will be identifying and demonstrating proper use of a variety of PFDs.
2. Show video. If time is limited, show only segments relating to PFDs.

Note: The HELP technique shown in *Adventures in Boating* is incorrect as it does not protect the underarms or sides adequately. Arms should be close to sides.

3. Show Overheads #14 and #24, and explain the CO₂ inflation mechanisms.
4. Divide the class into groups of two or three and give each group a **PFD Search card**.
5. Have each group send one person to bring back the PFD that most closely matches the description or directions on the card. Each group has 5 minutes to devise a sales pitch to try to convince the rest of the class to purchase their PFD.

6. Each group selects one person to model the PFD, and demonstrate how to don and properly size it. While the model is wearing the PFD, group members take turns “selling” the PFD, addressing the following points:
 - Comfort and wearability.
 - Hypothermia protection.
 - Whether it is U.S. Coast Guard approved, and if so, is it Type I, II, III, IV, or V?
 - Visibility to rescuers.
 - How much buoyancy it provides.
7. Have the students vote on:
 - Which PFD they would buy if they had the money.
 - Were the sales pitches effective in changing anyone’s mind?
8. Debrief activity. Discussion points:
 - Explanation of the types of PFDs.
 - Importance of correct fit and sizing.

- Additional strengths and weaknesses of various PFDs. Be sure to address the types of PFDs commonly worn locally.
- Close by asking what the best PFD is. Answer: The best PFD is the one you will wear.

Extensions

1. Have students sort PFDs in order of buoyancy, from the most buoyant to the least.
2. Have students sort PFDs in order of hypothermia protection, from the most to the least.

This activity addresses Alaska Content Standards:

Language Arts A-1 Effective writing and speaking, A-3 Demonstrate speaking skills, B-1 Meaning from written and oral text, B-2 Investigations in written materials, B-3 Relate to practical purposes, C-3 Group decision making

Science D-1, 3 Practical applications of scientific knowledge

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed choices, B-1 Identifying risk and consequence, C-5 Effects of attitude and behavior

PFD Search Cards

Find a U.S. Coast Guard approved Type I PFD. Read the label to learn how much buoyancy it has.	Find a U.S. Coast Guard approved Type IV PFD. Read the label to learn how much buoyancy it has.	Find a nonapproved PFD you could wear while kayaking. Does the label say how much buoyancy it has?
Find a U.S. Coast Guard approved Type III float coat without a beaver tail. Read the label to learn how much buoyancy it has.	Find the PFD you think would be easiest for searchers to spot from the air during the day.	Find a PFD that covers all of the high heat loss areas.
Find a U.S. Coast Guard approved Type II PFD. Read the label to learn how much buoyancy it has.	Find a U.S. Coast Guard approved Type V PFD. Read the label to learn how much buoyancy it has.	Find a U.S. Coast Guard approved Type III float coat with a beaver tail. Read the label to learn how much buoyancy it has.
Find a PFD that does not fit you.	Find a nonapproved throwable device.	Find a PFD that fits you well.
Find a U.S. Coast Guard approved Type III PFD. Read the label to learn how much buoyancy it has.	Find a nonapproved PFD that fits. Does the label say how much buoyancy it has?	Find a nonapproved inflatable PFD. Read the label to learn how much buoyancy it will have when inflated.
Find a U.S. Coast Guard approved inflatable PFD. Read the label to learn how much buoyancy it will have when inflated.	Find a PFD that you would wear working onboard a boat. Is it U.S. Coast Guard approved? How much buoyancy does it have?	Find a PFD you think would be most comfortable to wear. Put it on.

Why Wear PFDs?

Time: Five 90 minute class periods

Overview

Practice decision-making and refusal skills by evaluating safety issues on video and in news stories, and by field observations.

Objectives

After completing this activity, students should be able to:

1. Analyze the pros and cons of wearing a PFD when on the water.
2. Identify at least two steps that can be taken to avoid drowning.
3. Endorse the choice of wearing a PFD when on the water.
4. Identify an appropriate place to store PFDs on a vessel.
5. Practice refusing to participate in a dangerous activity.

Materials

Day 1

- One per student, Student Handouts #1 **Agree or Disagree?** and #2 **PFD Use Observation Sheet**

Day 2

- Student Handout #3 **PFD Tally Sheet**
- One per student, Student Handouts #4 **Boating Fatality Rates—PFD Use**, #5

Boating Fatality Rates—Age and PFD Use, and #6 Boating Fatality Rates—Gender and PFD Use

- *Casualties at Sea* video, Cape Beaver and Margaret Jane segment (5 minutes) **AMSEA**
- Assortment of PFDs **AMSEA**
- Clock with a second hand
- Dictionary
- Optional—liferaft with inflator **AMSEA**

Day 3

- One per student, one of the following: Student Handout #7 **Canada Boat Sinks, 2 Kids Missing**, #8 **Drowned Boys Had No Life Jackets**, #9 **Teen Drowns**, #10 **Fisherman Drowns**, #11 **Girl, 7, Drives Boat for Help But Effort in Vain**, or #12 **One Teen Dead, Two Safe in Canoe Mishap**

Day 4

- *Casualties at Sea* video, Alaskan Monarch segment (5 minutes) **AMSEA**
- One per student, Student Handout #1 **Agree or Disagree?**

Day 5

- *It Could Have Been Prevented* video (17 minutes) **AMSEA**
- One per student, Student Handout #13 **The Refusal Skill™**

Procedure

Day 1

1. Explain to students that they will be discussing when and where to wear PFDs and observing whether people wear PFDs on boats.
2. Distribute and have students complete Student Handout #1 in writing, or read the questions aloud and have students move to different sides of the room to answer.

3. Distribute and explain Student Handout #2. Have students spend an hour at an observation point where they can count the number of people wearing PFDs while boating. Students need to complete Student Handout #2 prior to day 2.

Note: Copies of completed surveys may be sent to the Alaska Marine Safety Education Association as a contribution to data collection efforts on PFD use.

Day 2

Before Class

1. Place PFDs in a visible place in the classroom.
2. Inflate the liferaft or establish an area that you will use as a liferaft.

During Class

1. Explain to students that they will be tallying their PFD observation data, and discussing boating fatality rates.
2. Compile students' PFD data on Student Handout #3. Discuss gender and age observations.
3. Watch the Cape Beaver and Margaret Jane segment of the *Casualties at Sea* video. Point out how little time anyone had to put on a PFD.
4. Distribute Student Handouts #4 through #6. Discuss the graphs. Have students work independently to answer the questions.
5. While students are working, suddenly tell them that their ship is capsizing and they must don a PFD and report to you immediately.
6. Don your PFD. Assist students as needed. When all are in their PFDs—zipped, buckled, and tied—lead everyone to the liferaft. Time the whole process from the time you sound the alarm until the last person is in the liferaft.
7. Take off PFDs and discuss the exercise, including the following:
 - Where could the PFDs be stored to make the abandon ship process easier and take less time?
 - On some vessels like ferries, large enclosed boats, or on live-aboards, it may not be reasonable to wear a PFD at all times. In these situations, a readily accessible storage location is necessary. Discuss what criteria are important for deciding a PFD storage location. When should you wear a PFD in these situations? What should you do with your PFD when you aren't wearing it? Discuss the pros of cons of storing a PFD by your bunk.
 - Discuss problems that arose during the exercise.

8. Repeat the process with everyone already in PFDs. Compare the times. Continue the discussion about where to store PFDs.
9. Have students complete Student Handouts #4 through #6.

Day 3

1. Explain to students that they will be “saving” victims by rewriting accounts of actual boating tragedies.
2. Distribute Student Handouts #7 through #12, one handout to each student. Be sure all stories are assigned at least once.
3. Have students write a retelling of their story so the people survive or don't get hypothermic.

Day 4

1. Explain to students that they will be watching footage of a crew abandoning ship into ice-filled seas, and sharing their rewritten stories.
2. Watch the Alaskan Monarch segment of the *Casualties at Sea* video. Discuss how no lives were lost. Note that all were wearing PFDs (immersion suits).
3. Share rewritten stories from day 3 and discuss.
4. Distribute Student Handout #1 and have students complete the activity again. Note any differences from day 1.

Day 5

1. Explain to students that they will be discussing ways to refuse to participate in a dangerous situation.
2. Watch *It Could Have Been Prevented*. Discuss this statement: “Richard knew he had a choice. He didn't have to ride with someone who had been drinking.” Emphasize that Richard didn't confront his friend, but quietly arranged for a safer situation for himself.
3. Based on Richard's example, brainstorm ways students could refuse to participate in or change a dangerous situation to be safer for themselves.
4. Distribute Student Handout #13. Review **The Refusal Skill™** and complete the

exercise using its scenarios or ones you create yourself. This activity will work better if you demonstrate with an assistant before giving students their scenarios. Refusing may be a difficult task for some students whose cultural upbringing has taught them to be quiet and cooperative. This is particularly true in the Yupik culture. If cultural values prohibit students from being assertive or even from suggesting alternatives, they should not be pushed to do so, nor should they be

criticized. It may be necessary to discuss this activity with adults of the culture to determine a more culturally sensitive approach. Also, be aware that role playing is not an effective learning strategy for some groups.

Variation

Have students come up with their own scenarios for **The Refusal Skill™** exercise.

This activity addresses Alaska Content Standards:

Language Arts A-1 Effective writing and speaking, A-2 Writing conventions, A-3 Demonstrate speaking skills, A-4 Writing and speaking with purpose, A-6 Using visual communication, B-1 Meaning from written and oral text, B-2 Investigations in written materials, D-1-A Personal experience and prior knowledge, D-1-B Formulating questions, D-1-D Analyzing information, D-2 Evaluating information, D-4 Explain and defend a position, E-1 Understanding perspective

Mathematics A-6 Statistics and data analysis, C-1 Using pictures, graphs and charts, E-2 Mathematics in daily life, E-3 Mathematics across the curriculum

Science D-1, 3 Practical applications of scientific knowledge

Geography B-1 Geographic characteristics of place, E-6 Physical hazards, F-6 Geography across the curriculum

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-5 Well-being of family, A-6 Making informed choices, B-1 Identifying risk and consequence, B-2 Effective communication, B-5 Evaluating information, C-1 Conflict resolution, C-2 Effective communications, C-5 Effects of attitude and behavior, D-1 Responsible decisions, D-2 Safe and healthy environments, D-6 Communication for community well-being

Name: _____ Date: _____

Agree or Disagree?

Circle the answer that best matches how strongly you agree or disagree.

1. It's okay to only carry and not always wear your PFD with you in an open boat.
 - a. I strongly agree
 - b. I somewhat agree
 - c. I somewhat disagree
 - d. I strongly disagree

2. It's okay if people who can swim don't wear PFDs in an open boat.
 - a. I strongly agree
 - b. I somewhat agree
 - c. I somewhat disagree
 - d. I strongly disagree

3. You need to wear a PFD whenever you are on the open deck of a boat.
 - a. I strongly agree
 - b. I somewhat agree
 - c. I somewhat disagree
 - d. I strongly disagree

4. You need to wear a PFD only when you are in a skiff or other open boat.
 - a. I strongly agree
 - b. I somewhat agree
 - c. I somewhat disagree
 - d. I strongly disagree

5. Wearing PFDs should be an individual decision.
 - a. I strongly agree
 - b. I somewhat agree
 - c. I somewhat disagree
 - d. I strongly disagree

Name: _____ Date: _____

Location: _____ Time of Day: _____

PFD Use Observation Sheet

Spend one hour in one location observing people around boats (at the boat ramp, for example). For each person, list gender, their approximate age, location, and whether or not they are wearing a PFD. People carrying PFDs are not wearing a PFD.

Gender (M/F)	Approx. Age	Location (Boat/beach/dock ...)	Wearing a PFD? (Yes/No)

Total # people counted: _____ Male: _____ Female: _____

Total # wearing PFDs: _____ Male: _____ Female: _____

Total # wearing PFDs in a boat: _____ Male: _____ Female: _____

Total % wearing PFDs: _____ Male: _____ Female: _____

Total % wearing PFDs in a boat: _____ Male: _____ Female: _____

PFD Tally Sheet

Student Observer _____

Observation Date _____

Location _____

People on Boat _____

People on Boat Wearing PFDs _____

Totals _____

Percent of boaters wearing PFDs: _____

Name: _____ Date: _____

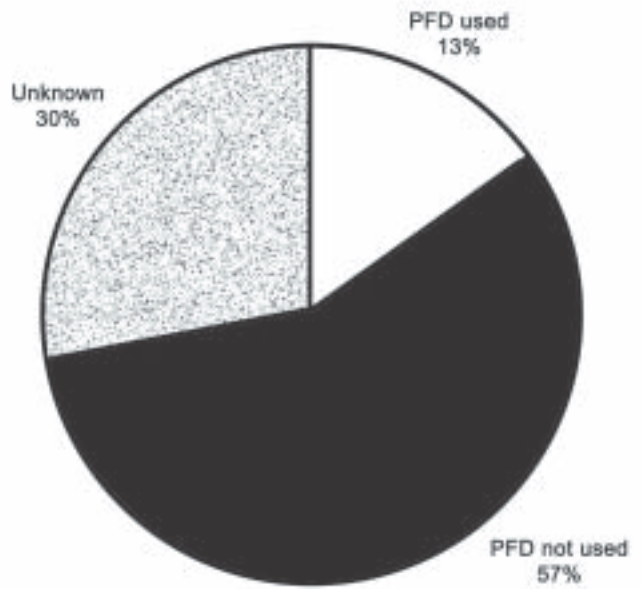
Boating Fatality Rates—PFD Use

The graph and explanation below is taken from a study, “Death on the Water: An Analysis of Non-Commercial Boating Fatalities in Alaska 1991-2000,” by Sue Hargis, U.S. Coast Guard District 17, Juneau, Alaska.

The graph shows that PFD use was confirmed in only 13% of Alaska’s boating fatalities over the past ten years. Although use is undetermined in another 30% of fatalities, it is unlikely in most cases. The fact that PFDs were definitely not used by 57% of those who died while boating shows that this is a major issue for fatality prevention efforts.

In 1999, the U.S. Coast Guard completed a PFD Wear Rate Study which showed that of the 34,895 boaters observed, 23.6% were wearing PFDs. While this percentage varies greatly by certain factors such as age and type of vessel, it also shows that those who died were more likely to not have been wearing a PFD.

Alaska Boating Fatalities by PFD Use
1991–2000



1. What does “fatalities” mean?

2. What does this study tell you about PFD use and dying on the water?

3. What does the researcher say about the fatalities where PFD use is undetermined?

Boating Fatality Rates—PFD Use

1. What does “fatalities” mean?

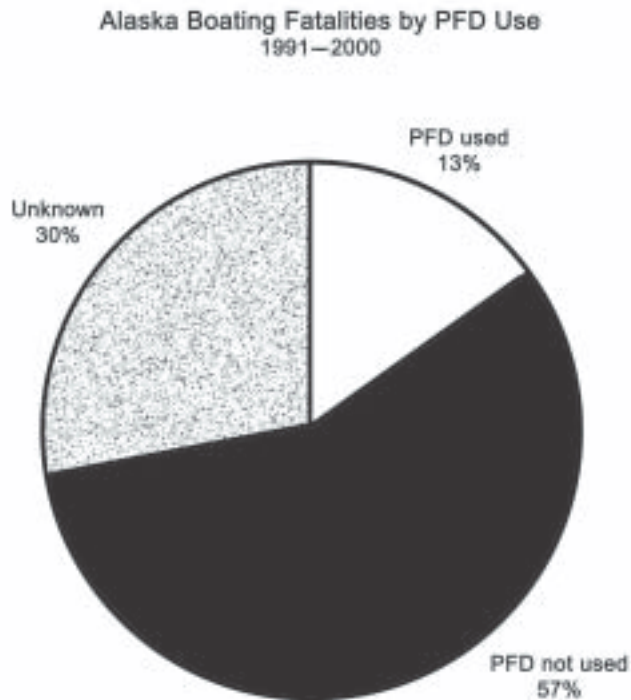
Deaths

2. What does this study tell you about PFD use and dying on the water?

Wearing a PFD decreases your chances of dying on the water.

3. What does the researcher say about the fatalities where PFD use is undetermined?

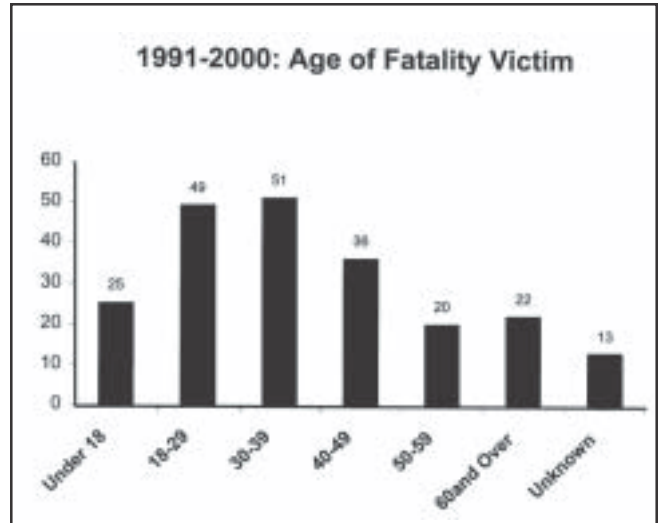
Those who died were more likely to not have been wearing a PFD than wearing one.



Boating Fatality Rates—Age and PFD Use

The graph and explanation below is taken from a study, "Death on the Water: An Analysis of Non-Commercial Boating Fatalities in Alaska 1991-2000," by Sue Hargis, U.S. Coast Guard District 17, Juneau, Alaska.

Age distribution of boating fatalities in Alaska shows that no age group is immune to dying during boating activities. Over 60% (63%) of fatalities were spread evenly among three primary age groups, which included eighteen to forty-nine years of age. A disturbing (but not surprising) finding is that 12% of boaters who died were under eighteen years of age. This shows that boating safety education efforts must be developed and targeted at all ages of boaters in order to impact fatality rates.



An important issue in fatality prevention is that according to the U.S. Coast Guard’s PFD Wear Rate Study completed in 1999, PFD use declines significantly with age. Wear rates decline from a high of 82.4% for the zero-to-five-year-old boating population, 58.1% for 6-17 years of age, 17% for 18-64 years of age, down to a mere 14% of boaters wearing PFDs in the 65 and greater age group.

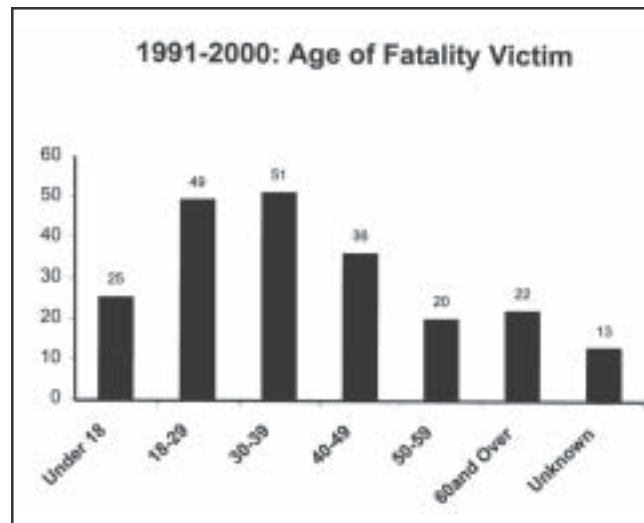
1. What percentage of fatalities were people under 18 years of age? _____
2. What percentage of fatalities were people 18-29 years of age? _____
3. How does PFD use change with age? _____
4. What percentage of preschoolers were wearing PFDs? _____
5. What percentage of people in elementary, middle, and high school were wearing PFDs?

6. What percentage of people between 18 and 64 years of age were wearing PFDs?

7. When a boat sinks, will an adult without a PFD be able to help others?

Boating Fatality Rates—Age and PFD Use

1. What percentage of fatalities were people under 18 years of age?
12%
2. What percentage of fatalities were people 18-29 years of age?
23%
3. How does PFD use change with age?
PFD use declines significantly as age increases.
4. What percentage of preschoolers were wearing PFDs?
82.4%
5. What percentage of people in elementary, middle, and high school were wearing PFDs?
58.1%
6. What percentage of people between 18 and 64 years of age were wearing PFDs?
17%
7. When a boat sinks, will an adult without a PFD be able to help others?
Not very well



Name: _____ Date: _____

Boating Fatality Rates—Gender and PFD Use

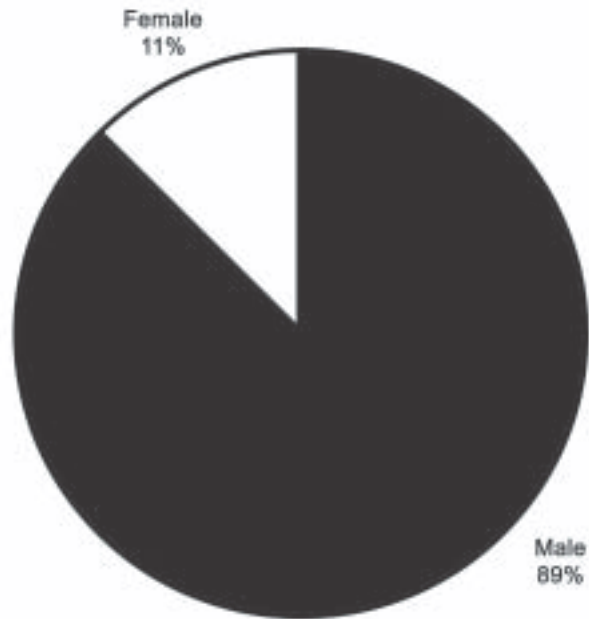
The graph and explanation below is taken from a study, "Death on the Water: An Analysis of Non-Commercial Boating Fatalities in Alaska 1991-2000," by Sue Hargis, U.S. Coast Guard District 17, Juneau, Alaska.

Most of Alaska fatalities (89%) over the past ten years involved male boaters. This is similar to the national profile of boating fatalities but is an interesting finding when compared to national boating demographics, which indicate that 60% of boaters are men (no Alaska-specific boater gender information is available).

The finding of 89% male boating fatality victims is also interesting when compared to the Alaska 1995 population calculations that estimate gender percentages of 52% males and 48% females in the overall Alaska population.

The U.S. Coast Guard's PFD Wear Rate Study completed in 1999 showed a slight difference in wear rates between males and females. Males were somewhat less likely than females to use PFDs, at wear rates of 22.7% for males and 24.8% for females.

Alaska Boating Fatalities by Sex
1991 - 2000



1. As a group, are men or women more likely to drown in boating fatalities? _____

2. Brainstorm ideas to explain why the difference is so great between men and women. Can you think of any ways to decrease the drowning rate for men?

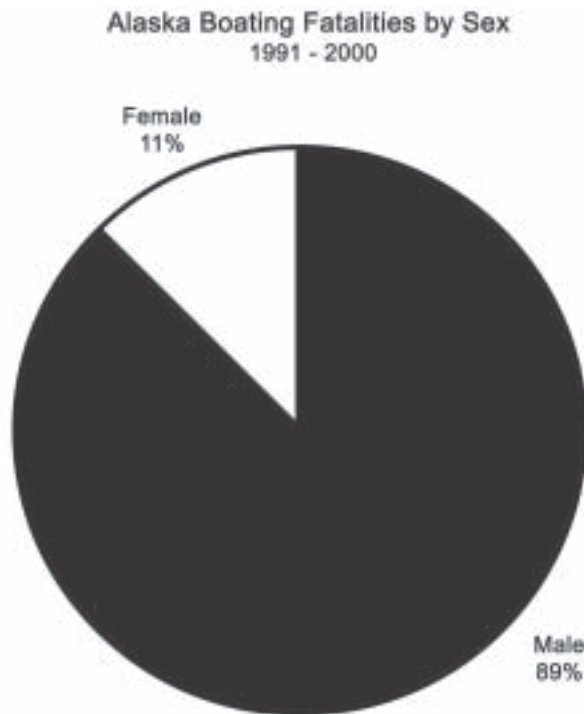
Boating Fatality Rates—Gender and PFD Use

1. As a group, are men or women more likely to drown in boating fatalities?

Men

2. Brainstorm ideas to explain why the difference is so great between men and women. Can you think of any ways to decrease the drowning rate for men?

Men tend to take greater risks than women. Invite locally respected people in to advocate for sensible behavior around and on the water; hold a competition with a valued reward to promote PFD use and safe behavior; advocate for PFD loaner programs.



Canada Boat Sinks, Two Kids Missing

TOBERMORY, Ontario (AP)—Rescuers searched the cold, choppy waters of Georgian Bay on Friday for two seventh-grade students missing after a tour boat sank during a school outing.

The 33-foot *True North II* went down near Flowerpot Island, a popular tourist destination on the bay of Lake Huron, police and U.S. Coast Guard officials said. A U.S. Coast Guard vessel rescued 15 students, two teachers, and the boat's captain clinging to a large liferaft.

After more than five hours, though, two of the students were still missing in the 50° water.

“Obviously hypothermia is a major concern,” said U.S. Coast Guard spokesman Lawrence Swift. Five ships from the U.S. Coast Guard and Parks Canada were searching the waters, aided

by a helicopter and private boaters who volunteered to help, he said.

The *True North II* sank in rough water about 200 feet deep, according to Parks Canada spokesman Ross Thomson. The rescued children were taken to a nearby medical center, where some were treated for mild hypothermia, he said.

Shipwrecks are a major attraction at Flowerpot Island, with tour operators taking visitors in glass-bottom boats to look at them.

It was unclear where exactly the missing students were from. They go to a secondary school in Tiverton, Ontario, which is attended by children from rural towns throughout the region, 110 miles west of Toronto.

Used with permission from the Associated Press.

Drowned Boys Had No Lifejackets

Divers recover victims minutes and meters apart in Georgian Bay waters

By Rob Granatstein, Sun Media, Tobermory, Ontario, Canada

Roy Simmons can only ask why. Why weren't his grandson Wade and the other students on the school trip wearing lifejackets on the tumultuous Georgian Bay waters when the tiny tugboat sank, killing the boy and one of his classmates?

The bodies of the two 12-year-olds were recovered by OPP divers at the bottom of Georgian Bay yesterday morning just meters away from the sunken *True North II*.

"How could they let them go out without making sure there were life-jackets for all, especially with such rough seas?" Roy Simmons asked as he fought back tears. "It makes no sense to me."

Two students, Wade Simmons of Tiverton, and Henricki Foerester of Paisley, both star athletes in the area, died.

Simmons said police told the family the children were definitely not wearing life-jackets.

"There may have been life-jackets on the boat, but apparently it capsized so quickly they didn't have time to get anything," said Simmons, 72.

The tour boat went down fast and furious after powerful waves crashed into the vessel and tore one of its doors away.

"It took the door right off the hinges," said Michael Depatie, whose son Jason survived Friday's tragedy.

"And then the water came in right away and the boat went down pretty quick. From what he's told me, it happened really fast," Depatie, of Tiverton, Ont., told CP.

OPP said the glass-bottom boat sank within seconds, possibly explaining why no distress call was sent out by the boat's experienced captain, Hugh Campbell.

"Once they came off the boat and they were floating in the water, he said everybody was calm. There was no panicking," Depatie said of his 13-year-old son who escaped with minor injuries.

"There were other boats in the water and they were trying to get their attention. But with the waves being high, they couldn't be seen."

The tugboat had 20 people aboard, including 13 grade seven students from Bruce Central public school, when it went down in five-foot waves Friday morning.

Eighteen of the tugboat's riders grabbed onto two floating round rafts that were deployed from the boat, and floated 400 meters back to Flowerpot Island, where the class had spent the previous night.

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Teen Drowns

ANCHORAGE (AP)—An Anchorage teenager drowned after falling from his personal watercraft in a pond alongside the Seward Highway, Alaska State Troopers said Monday.

Nicholas Newman, who just finished his freshman year at East Anchorage High School, fell into the water at about 7 p.m. Sunday, troopers said.

He and a friend were reportedly riding their watercraft in one of many ponds along the highway south of Girdwood.

Troopers say the boy fell into 10 to 12 feet of water and didn't surface. He wasn't wearing flotation gear.

Used with permission from the Daily Sitka Sentinel.

Fisherman Drowns

KETCHIKAN (AP)—A Washington state fisherman drowned in Tongass Narrows early Wednesday while trying to board a docked seiner.

Gregory Alien Buchanan, 26, of Sedro Woolley, Wash., was climbing down a ladder on the side of the Ketchikan cruise ship dock about 2:30 a.m. when he fell into the water, according to Ketchikan police.

A woman with Buchanan yelled for help and a crewman jumped into the water but couldn't find Buchanan, police said. He was trying to board the fishing vessel *Quandary*.

Rescue teams and divers were called out to search, but came up with nothing. Buchanan's body was spotted about 6 a.m. by the crew on a tugboat nearly a mile away.

Buchanan was working for the summer on a different seiner, the *Defiance*.

An autopsy was conducted Wednesday afternoon, but results weren't available immediately. No foul play is suspected. But investigators are almost certain that alcohol was a factor, said Deputy Police Chief Michael Hunter.

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Girl, 7, Drives Boat for Help But Effort in Vain

ANCHORAGE (AP)—A 7-year-old girl who saw her father and grandfather fall from their boat and disappear beneath the waters of a lake near Glennallen managed to drive the boat to shore, walk a half-mile across wet, brushy shoreline and summon help, the Alaska State Troopers say. But the girl's efforts were in vain.

Robert Mills, 34, and Rocky Mills, 55, drowned in Sunday's accident on Susitna Lake. Their bodies were found about nine hours later within an arm's reach of one another in 25 feet of water, troopers said.

"She's a tough little girl," said Alaska state park ranger Mike Goodwin, one of several people who had searched for the men.

The men had some high-quality flotation vests in the boat but were not wearing them, troopers said. The girl was wearing hers.

The name of the girl and her hometown were not immediately available. The men were from Oregon.

The group had fishing gear ready but was not using it. About 10:30 a.m. Sunday, the men leaned over the side to look at something in the water, causing the boat to tip, troopers said. Both fell in.

"For a period of time, the girl tried circling the boat around to get to them" but didn't know how to do it, trooper spokesman Tim DeSpain told the *Anchorage Daily News*.

It was unclear how long the men remained on the surface. "The young girl was a little fragmented in her story," Goodwin said. The men disappeared, and the girl headed for shore.

"She said her father had showed her how to run the boat in the past," Goodwin said. "She was able to motor the boat a half-mile to shore to get help."

The girl beached the boat in a swampy area beside a dock and walked to a nearby cabin. No one was home, so the girl headed to another cabin where her family had been staying and where there was a woman who apparently was a friend of her father, Goodwin said.

When the call for help was broadcast on the local radio channel, a resident took his boat out and found hip boots and three caps floating in the water, Goodwin said.

The bodies were found barefoot. They probably took off the boots when they filled with water as the men struggled to stay afloat, he said. [Editor's note: Boots do not cause you to sink.]

Goodwin happened to be in the vicinity. State troopers also responded. Goodwin, a trooper and the girl went out in a boat to where the girl thought the men fell in.

"She was able to recall where, and we marked that as well," he said.

The Matanuska-Susitna Borough Dive Team headed straight for the area between the places where the girl said the men went under and where the boots and caps were found, about 100 yards away.

"The men were found halfway between those markers," Goodwin said.

The deaths conform to statistics about Alaska boating fatalities, park ranger Monty Smith said.

"The PFDs were in the boat," Smith said. "That doesn't do you any good when you're in the water. Nine out of 10 of our drowning victims don't have PFDs on."

Neither alcohol nor foul play was suspected, troopers said.

Used with permission from the Daily Sitka Sentinel.

One Teen Dead, Two Safe in Canoe Mishap

HANSON, Mass. (AP)—The body of a teenage boy was recovered in Maquan Pond after the canoe he and two companions were in overturned, police said.

The unidentified victim, who police said was from Reading, was not wearing a life jacket. The other two in the canoe, identified only as college students, were wearing safety vests, and made it to shore on their own after the canoe capsized.

Approximately 100 searchers had been looking for the young man shortly before 1 a.m. Friday. The body was found in about 9 feet of water about 5 a.m.

Police said a specially trained dog helped the searchers find the body.

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The Refusal Skill™

The goal of this activity is to both keep friends and stay out of a dangerous situation. You will be working in pairs. One of you will play the role of the person who wants to participate in some dangerous behavior. The other person will play the role of the person who doesn't want to. The one who doesn't want to will use The Refusal Skill™ to decline to participate. Debrief at the end.

The Refusal Skill™ has several steps:

1. Ask questions
“What...?” “Why...?” This clarifies the situation.
2. Name the trouble specifically
“That’s...”
3. State the physical and emotional consequences
“If I do that....”
4. Suggest an alternative that communicates that you are rejecting the activity and not the person
“Instead, why don’t we....”
5. Move it, sell it, and leave the door open to persuade your friend that your position and/or alternative is attractive
“If you change your mind....”

Allow yourself to maintain control of your situation, try to convince the other person(s) that you are serious, make alternatives look doable and attractive, and emphasize the importance of your friendship and maintaining it.

Here’s an example:

Scenario: Your friends are leaving in a skiff for an overnight party a couple of miles from home. The weather is windy and the sky looks dark. It is only a half hour before sunset. Everyone is at the boat, but no one has any PFDs. No one thinks it is important to have them and they are anxious to leave.

For this scenario, there are many ways you could use The Refusal Skill™ if you were the person trying to keep friends and avoid a dangerous situation. One possibility is:

1. Ask questions
“It looks pretty dark and windy. What do you think might happen if it got worse? ...The party would be fun, but what if we hit something? ...What do you think would happen if we fell in the water?”
2. Name the trouble
“The weather looks bad and it is dark. Without PFDs we could drown if we end up in the water.”
3. State the consequences
“If we do that and we end up in the water, someone is likely to die. Then I’d feel terrible if I survived and you didn’t, and your parents would be devastated.”
4. Suggest an alternative
“Why don’t we all go over to the campsite down the road for our party instead?”
5. Move it, sell it, and leave the door open
“We could order pizza and pop and build a big bonfire. I’ve got some great music!”

Now choose one of the following scenarios and practice using The Refusal Skill. It may be awkward to do it at first, but it may save your life some day!

- A. You are invited by a friend’s family to join them for the day on their cabin cruiser. When you arrive at the dock you notice that you and the five-year-old are the only ones with PFDs. Is this a danger to you? How might it affect you if the boat sank?
- B. Your friend meets you on the dock and wants you to go hunting with him now. He is wearing tennis shoes and cotton clothes. He has no survival gear or PFDs aboard, and you are wearing street clothes. He doesn’t want to wait while you go home to change.

- C. You and a friend have spent the night in a Forest Service recreation cabin seven miles by water from town. Your girl/boy friend is coming to town tonight on the plane and you want to see her/him. The weather is just beginning to become windy and rainy, and the water is extremely rough for your 14-foot open boat. Your friend says you should try to “beat the weather” and take the boat to town.
- D. On the spur of the moment, a gang of your friends wants to take a skiff for a ride. The boat belongs to one friend’s family, but no one has a PFD or any other gear. It is a beautiful windy day, there are 12 of you, and the skiff is rated to hold seven.

Don That Immersion Suit!

Time: 30-45 minutes

Overview

Practice donning immersion suits in the classroom.

Objectives

After completion of this activity students should be able to:

1. Demonstrate proper technique in donning an immersion suit.
2. Demonstrate proper lubrication of an immersion suit zipper.

Materials

- Enough immersion suits for one-third of the class **AMSEA**
- Two per immersion suit, plastic bags (grocery bags are ideal)
- Immersion suit zipper wax **AMSEA**
- Overheads #19 **Donning an Immersion Suit** and #21 **Inflating the Immersion Suit Air Bladder**
- One copy per group of three students, Overhead #19 **Donning an Immersion Suit**
- *When Seconds Count* video (16 minutes) **AMSEA**

Procedure

1. Explain to students that they will be donning immersion suits and waxing the suits' zippers.
2. Watch *When Seconds Count*. Have students focus on the procedure for donning an immersion suit. Review the steps with them and show Overheads #19 and #21.
3. Break class into groups of three. Each group should have people of similar physical size in it. Give each group a copy of Overhead #19.
4. Assign immersion suits to groups according to size. Give each group two plastic bags to cover their shoes when donning the suit.
5. Demonstrate the steps in donning a suit. Emphasize the importance of helping one another and following the steps on the handout.

6. Students practice donning the immersion suits.
7. Have students wax the entire zipper inside and outside at some point during the exercise.

Note: Caution students to be careful with immersion suits. Watch for rough handling, especially stretching the seams and yanking on the expensive zippers. Watch for students who feel claustrophobic once in a suit, and remember that once students have hoods on, they will not be able to hear well.

Extension

Challenge students to don suits in less than one minute. Practice the assist technique shown in *When Seconds Count*.

This activity addresses Alaska Content Standards:

Language Arts B-1 Meaning from oral and visual text

Science D-1, 3 Practical applications of scientific knowledge

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed decisions

What Is Wrong with These PFDs?

Time: 45-60 minutes

Overview

Evaluate an assortment of PFDs in various conditions.

Objectives

After completing this activity, students should be able to:

1. List PFDs in good condition, PFDs that need maintenance, and PFDs that are no longer serviceable.
2. List critical features of a functional PFD.

Materials

- Collection of PFDs in different condition—some in excellent condition, some needing maintenance, and some ready to be thrown out **AMSEA**
- One per group, Student Handouts #1 **What Is Wrong with These PFDs?** and #2 **Take Care of Your PFD**

Procedure

Before Class

1. Number the PFDs so students can evaluate them by number.

During Class

1. Explain to students that they will be inspecting PFDs to determine what, if anything, is wrong with them.
2. Show a PFD in poor condition. Is anything wrong with it? If so, what?
3. Explain that PFDs should be inspected periodically and that the class will compile a checklist for this inspection.
4. Form work groups and assign groups to come up with a list of five things that should be inspected on a PFD.
5. When students have completed their lists, have each group share with the class and

make a master list on the board. Use discussion, debate, and consensus to reduce the list to five items that should be inspected on a PFD.

6. Distribute Student Handout #1 to each group and have a recorder write the selected criteria on the form. Each team then evaluates each PFD and records the results on their chart.
7. Decide as a class whether each PFD should be approved, discarded, or repaired. Sort the PFDs accordingly.
8. Distribute and have students complete Student Handout #2.

This activity addresses Alaska Content Standards:

Language Arts A-2 Writing conventions, B-1 Meaning from oral and visual text, B-2 Evaluate visual information, B-3 Relate to practical purposes

Mathematics A-1 Numeration, A-3 Arithmetic and computation

Science D-1, 3 Practical applications of scientific knowledge

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed decisions

Name: _____ Date: _____

What Is Wrong with These PFDs?

After the class has agreed to five things that should be inspected on a PFD, list these things in the first row of the chart. Then evaluate each PFD by writing GOOD or POOR under each criterion.

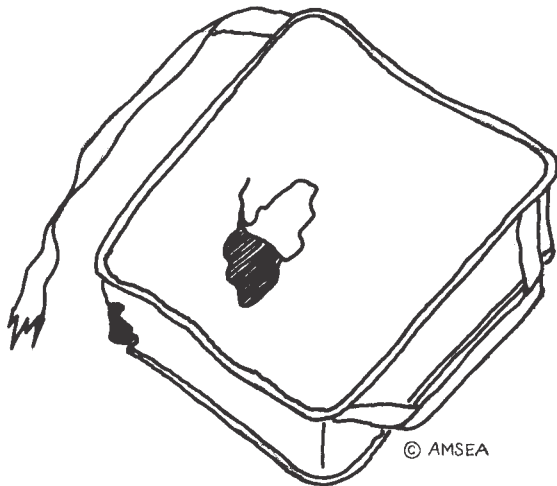
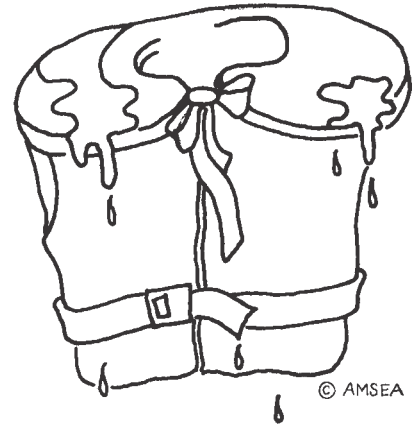
	Criterion #1	Criterion #2	Criterion #3	Criterion #4	Criterion #5
PFD 1					
PFD 2					
PFD 3					
PFD 4					
PFD 5					
PFD 6					
PFD 7					
PFD 8					
PFD 9					
PFD 10					
PFD 11					
PFD 12					

1. Which of these PFDs are in good enough shape to wear?
2. Which could be repaired?
3. Which would you discard?

Name: _____ Date: _____

Take Care of Your PFD

What is wrong with these PFDs? Write your answers on the lines below each picture.



Inspecting PFDs

Time: 30-45 minutes

Overview

Inspect PFDs and perform basic maintenance.

Objectives

After completing this activity, students should be able to:

1. Demonstrate at least five steps to take to inspect a PFD.
2. Demonstrate at least five steps to take to inspect an immersion suit.

Materials

- One per group of three students, PFD assortment in various conditions **AMSEA**
- One per group of three students, immersion suit **AMSEA**
- Immersion suit zipper wax **AMSEA**
- One per group of three students, Student Handouts #1 **Checklist for PFD Inspection** and #2 **Checklist for Immersion Suit Inspection**
- Overhead #25 **Care and Maintenance of Immersion Suits**
- *When Seconds Count* video, Maintenance segment (3 minutes) **AMSEA**

Procedure

1. Explain to students that they will be inspecting PFDs.
2. Brainstorm PFD inspection needs with students and list them on the board.
3. Divide class into groups of three, and distribute a PFD and Student Handout #1 to each group. Compare the handout with the list on the board.
4. Allow groups 5 minutes to inspect their PFDs.
5. Have each group show their PFD, describe problems they discovered, and recommend steps to correct the problem.
6. Brainstorm immersion suit inspection needs with students, and list them on the board. Show Overhead #25.
7. Watch the maintenance segment of *When Seconds Count*. Compare the students' list with the steps shown in the video.
8. Distribute an immersion suit, zipper wax, and Student Handout #2 to each group.
9. Allow students 10 minutes to inspect and perform maintenance on their suit.
10. Have each group report to the class any problems discovered with their suits and describe steps to take to correct the problems.

This activity addresses Alaska Content Standards:

Language Arts B-1 Meaning from written, oral, and visual text

Science D-1, 3 Practical applications of scientific knowledge

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-5 Well-being of family, A-6 Making informed decisions, B-1 Risk and consequences

Name: _____ Date: _____

Checklist for PFD Inspection

Use this checklist to inspect your PFD

- Check for tears.
- Check for broken or malfunctioning buckles, zippers, and straps.
- Check for leaks in kapok vests and cushions by squeezing. If you hear air escaping, the plastic bag enclosing the kapok leaks, and the PFD will eventually become waterlogged and useless.
- Check foam PFDs for compression. They will not provide their stated flotation if they have compressed foam.
- Check that reflective tape is secure.
- Check attached lights for function and up-to-date batteries.
- Inflatables need special maintenance. Follow manufacturer's guidelines.

CO₂ cartridge

- Ensure cartridge was not previously fired (check for hole).
- Check that cartridge is completely screwed into mechanism.
- Self-inflating mechanism (not all inflatables have them)
- Inspect and replace white dissolving "pill" if pitted; replace dissolving pill once a year even if not pitted.
- Does the bladder hold air? Leaving it inflated overnight is the only way to find most leaks.

Name: _____ Date: _____

Checklist for Immersion Suit Inspection

Use this checklist to inspect immersion suits

- Inspect suit closely for holes, tears, and compression wrinkles.
- Inspect the zipper for smooth operation and signs of corrosion (green). Ensure zipper works smoothly over its entire length. Don't force it. Scrub with bare toothbrush to remove residues, if present. Scrub with a toothbrush and a paste of baking soda and water to remove corrosion, if present.
- Lubricate zipper on the inside and outside with product recommended by manufacturer.
- Inspect reflective tape for loose corners or edges.
- Inspect seams for leaks.
- Inspect foot valves if appropriate.
- Inspect valves and hoses attached to pillow/buoyancy ring. Inflate and leave overnight to check for leaks. Make sure the lock ring is in the open position.
- Test attached lights and check battery dates.
- Store unzipped.
- Unless instructions state otherwise, roll suit from feet to head before putting in bag—avoid folding.
- Check closures on storage bag and general condition of bag to ensure suit can be removed easily.

Storing Immersion Suits

Time: 20-30 minutes

Overview




Practice retrieving and donning immersion suits in simulated emergency conditions.

Objectives

After completing this activity, students should be able to:

1. List two considerations when storing an immersion suit.
2. Don an immersion suit.

Materials

- Immersion suits of appropriate sizes in storage bags 
- Immersion suit zipper wax 
- Optional—Life raft 

Procedure

Before Class

1. Set up your room with a “boat area,” using chairs or other objects to create obstructions/small spaces in the area. If you use a life raft, inflate it next to the “boat.”
2. Place immersion suits in their bags in difficult-to-reach places.

During Class

1. Explain to students that they will be looking at different kinds of places to store immersion suits on a boat. Introduce them to the “boat.”
2. The first group of volunteers goes into the “boat.” When you give the call they will get and don their immersion suits, gather together in one place, and exit the “boat” (into the life raft if you have one) as quickly

as possible. Time them. Encourage students to be careful when donning immersion suits to protect zippers and seams.

3. The same group stores their suits in a place of their choice. Repeat the exercise and time it. Discuss what worked and what didn’t, and whether it was easier after doing it once before.
4. Have another group do the exercise. Encourage each group to learn from the last.
5. Summarize by listing the lessons learned from the whole class.

Note: Don’t allow students to be rough with the suits. Wax zippers after each exercise.

This activity addresses Alaska Content Standards:

Language Arts B-1 Meaning from written, oral, and visual text

Science D-1, 3 Practical applications of scientific knowledge

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed decisions, B-1 Risk and consequences



Unit 3: Cold Water Survival

Unit Rationale

Drowning is the second leading cause of injury death to youth nationwide and the leading cause of unintentional death in rural Alaska. In the 1990s, Alaska's drowning rate was ten times the national average. Accidental immersion in cold water endangers the life of both swimmers and nonswimmers, and every state in the U.S. has water cold enough to cause hypothermia, which is a significant contributor to drowning. The good news is that you can learn to increase your survival time in cold water.

While prevention is the key to survival, this unit offers the opportunity to learn and practice what to do in the event of a cold water emergency. The opportunity to test various types of survival equipment and to practice skills in a supervised, controlled environment will contribute to your ability to survive an actual emergency.

Unit Goals

To develop an understanding of the effects of accidental immersion in cold water and the general principles of surviving a cold water emergency;

To apply the Seven Steps to Survival to a cold water survival situation; and

To provide an opportunity to practice cold water survival skills in a safe environment.



Cold Water Survival: Teacher Information

The information in this section gives teachers a background in the topic. Use your judgment when presenting this material; some concepts may not be suitable for younger children.

Note: The cold water near-drowning signs, symptoms, and treatment described here are based on guidelines developed by the State of Alaska and revised in 1996. Consult your state Emergency Medical Services office for current recognition and treatment guidelines. It is important to keep current with new developments in this field.

Physiological Effects of Cold Water Immersion

Sudden immersion in cold water may produce cold water shock

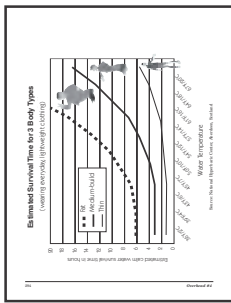
- A. Signs and symptoms include
 - 1. Pain
 - 2. Uncontrollable gasping, including aspiration of water—may cause drowning
 - 3. Hyperventilation—can lead to unconsciousness and drowning
 - 4. Rise in blood pressure—can cause heart problems and stroke
 - 5. Increased heart rate
 - 6. Loss of sense of direction due to cold water entering ear and affecting equilibrium
- B. This may explain why some people suddenly disappear in the water (Sudden Disappearance Syndrome)

Immersion hypothermia = hypothermia caused by immersion in cold water

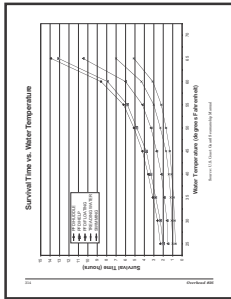
- A. Accidental immersion in cold water endangers both swimmers and nonswimmers
- B. Water conducts heat 25 times faster than air of same temperature so hypothermia begins to develop quickly
- C. Due to cold, lack of muscle coordination begins to develop within minutes, making it difficult to self-rescue or respond to assistance
- D. Hypothermia can cause death in the water or contribute to drowning if victim loses consciousness—about 50% of drownings are a result of hypothermia

Alcohol Consumption

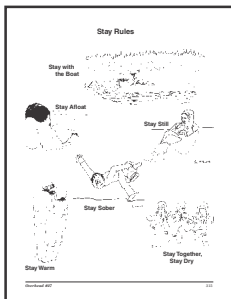
- A. Increases risk of cold water shock and immersion hypothermia
- B. Leads to loss of coordination and poor judgment which prevents self-help
- C. Causes blood vessel dilation, which speeds hypothermia onset
- D. See *Small Boat Safety and Survival* (Volume 4), Preparing for a Boat Trip unit for more information on alcohol and boating



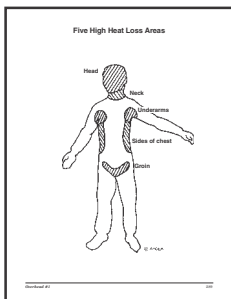
Overhead #4



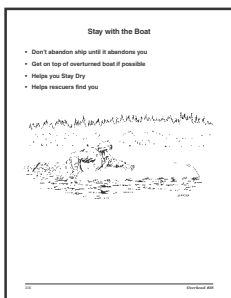
Overhead #26



Overhead #27



Overhead #1



Overhead #28

Survival Factors in Cold Water Emergencies

Will to live

- Very important in all survival situations
- Thinking about loved ones and things important to you helps focus on living
- Some people have a stronger will to live than others
- In identical situations, a strong will to live can make the difference between life and death

Body

- Body fat—in general, people with more body fat lose body heat more slowly (see Overhead #4)
- Cardiovascular fitness—a high level of cardiovascular fitness increases likelihood of survival
- Health—in general, sick and injured people have a more difficult time staying warm

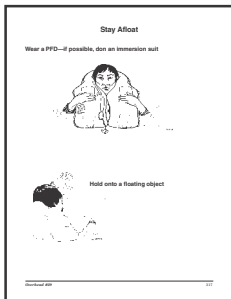
Environment

- Water temperature—cooler temperatures cool you faster (see Overhead #26)
- Water movement—moving water cools you faster than still water
- Air temperature and movement
 - Cooler air temperatures cool you faster
 - Higher wind speeds cool you faster

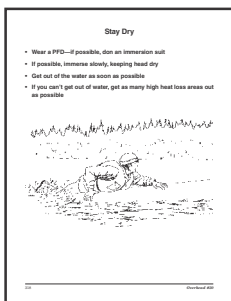
Stay Rules for surviving a cold water emergency (see Overhead #27)

- Stay warmer longer and increase survival time in cold water by practicing and following the Stay Rules
- Try to protect the five high heat loss areas (see Overhead #1)
 - High blood circulation areas close to skin surface
 - Head (50% of body heat lost through head), neck, underarms, sides of chest, groin
- Stay with the Boat (see Overhead #28)
 - Don't abandon ship until it abandons you
 - Get on top of overturned boat if possible
 - Keeps you dry
 - Increases chance of being spotted
 - To swim or not to swim
 - Swimming cools your core up to 30% faster than staying still, depending on clothing
 - Many people become hypothermic and drown while trying to swim to shore
 - Whether or not to swim to shore is a difficult decision; there are many factors to consider:
 - Tides

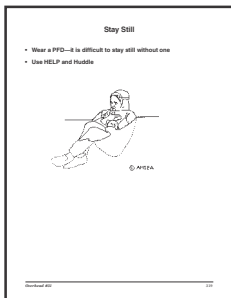
- (2) Currents
- (3) Wind/wave action
- (4) Visibility
- (5) Other boats in area—availability of help
- (6) Distance to shore
- (7) Swimming ability
- (8) Clothing you are wearing, including type of PFD



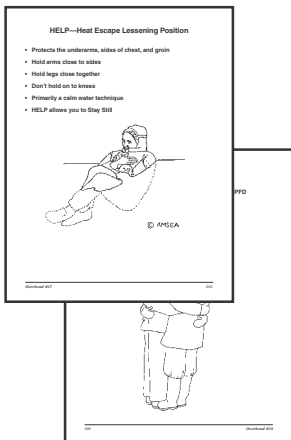
Overhead #29



Overhead #30



Overhead #31



Overheads #17 and #18

D. Stay Afloat (see Overhead #29)

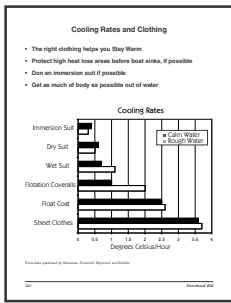
1. Wear a PFD—if possible, don an immersion suit
 - a. Must be able to float in order to breathe
 - b. PFD helps in recovery from shock of cold water
2. Trapped air in clothes and boots assists flotation, but panicky movements remove air trapped in clothing
3. Holding onto floating debris or objects offers additional flotation
4. If overboard in a river
 - a. Keep feet up and pointed downstream to help prevent entanglement and protect head from injury
 - b. Approach riverbank at an angle, let current help take you to safety

E. Stay Dry (see Overhead #30)

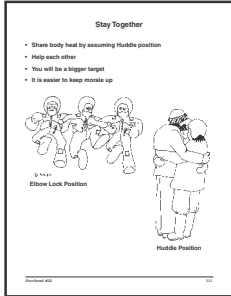
1. Wear a PFD—if possible, don an immersion suit
2. If there is any warning, immerse slowly, keeping head dry
3. Get out of the water as soon as possible
 - a. Climb into liferaft, or onto bottom of capsized boat or floating debris
 - b. Water conducts heat 25 times faster than air of the same temperature—it is better to get out of the water, even if it is windy
4. If it is impossible to get completely out of the water, get as many high heat loss areas out as possible
5. Keep head dry and out of the water as much as possible
6. Do not “drownproof” (face-down floating survival technique)—it increases heat loss by 80% compared with staying still with head out of the water

F. Stay Still (see Overhead #31)

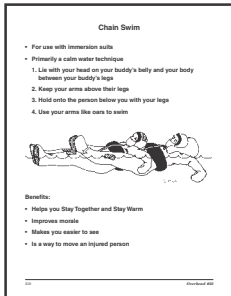
1. Wear a PFD—it is difficult to stay still without one
2. Movement
 - a. Increases circulation in extremities
 - b. Results in more cooled blood returning more quickly to core than staying still
 - c. Results in a more rapidly reduced core temperature
3. Swimming cools core up to 30% faster than staying still, depending on clothing
4. Use HELP and Huddle to Stay Still (see Overheads #17 and #18)
 - a. These positions cannot be maintained without flotation aids



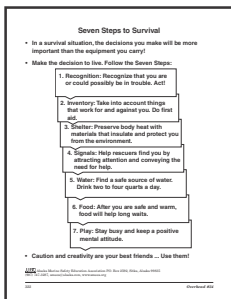
Overhead #32



Overhead #33



Overhead #22



Overhead #34

- These positions double survival time compared to swimming or treading water by reducing cooling effects of conduction and convection
- In rough water modify HELP by dropping legs and crossing ankles to keep face out of the water

G. Stay Warm (see Overhead #32)

- Protect high heat loss areas before boat sinks, if possible
 - If available, don an immersion suit
 - If not available, choose a PFD that provides the most insulation
- Get as much of your body out of the water as possible, especially high heat loss areas—use liferaft, skiff, boat, or floating objects
- If getting out of the water is impossible, assume HELP or Huddle position

H. Stay Together (see Overhead #33)

- Share body heat by assuming Huddle position
- Help each other
- You are a bigger target for rescuers to see
- It is easier to keep morale up
- If free of vessel and safe from entanglement, tie yourselves together
- If in immersion suits, chain swim if necessary to swim (see Overhead #22)

I. Stay Sober

- Using alcohol or drugs
 - Increases chances of ending up in the water
 - Decreases coordination
 - Impairs judgment
- Alcohol is a vasodilator (it makes blood vessels bigger), making you lose heat faster
- Impaired judgment in water can cause more problems

Seven Steps to Survival

- Developed by U.S. Coast Guard search and rescue personnel after interviewing survivors
- Help identify and prioritize needs in an emergency situation
- Review the Seven Steps to Survival every time situation changes
- They are organized in order of priority, but be flexible in applying them

Seven Steps to Survival (see Overhead #34)

- A. Recognition—recognize that you are or could possibly be in trouble
- Think and act like a survivor!
 - Accept that you need to take action to save your life

3. To wear a PFD, carry a survival craft, immersion suits, survival kits, abandon ship bags, etc., is to recognize that you may have an emergency
- B. Inventory—take into account things that work for and against you
1. People
 - a. Account for all
 - b. Assess and treat injuries
 - c. Assess emotional condition
 - d. Inventory skills
 - e. Elect a leader—decisions must be made and tasks assigned
 2. Equipment—condition and availability
 - a. Survival kits
 - b. Comfort kits
 - c. Look around and on you to determine what can potentially help
 3. Environmental factors
 - a. Weather—present and forecasted
 - b. Cliffs, rocks, reefs, shore, etc.
 - c. Animals—dangerous or food?
 4. Location—do you know where you are?
 5. Ability to communicate with rescuers
 6. Initial inventory may be rapid
 7. Inventory is ongoing as survival situation changes
 - a. Take advantage of positive changes
 - b. Be creative!
 - c. Your most valuable tool lies between your ears!
- C. Shelter—anything that protects you from environment
1. Stay with the boat until it is more dangerous than being in water
 2. Clothes are primary shelter (see Hypothermia, Unit 1 this volume, for more information)
 3. Liferafts offer good shelter
 4. If you are in the water without a liferaft
 - a. PFDs insulate and keep more of your body out of the water
 - b. Assume Heat Escape Lessening Position (HELP) if alone
 - c. Assume Huddle position if in a group
- D. Signals—must attract attention and convey need for help
1. Adult person floating is only four square feet visually
 2. Brighter clothes and PFDs attract more attention
 3. Reflective tape increases ability to attract attention

4. Strobe light, Emergency Position Indicating Radio Beacon (EPIRB), mirror, whistle, flashlight work in or on the water
 5. Waving two arms overhead means “I need assistance!”, waving one arm overhead means “All is well.”
 6. Staying with overturned/half sunk boat makes you a bigger target
 7. Climbing onto floating debris makes you a bigger target
 8. See *Small Boat Safety and Survival* (Volume 4), Boating Emergencies unit for more information on signals and float plans
- E. Water—required for critical body functions
1. Water is essential for life
 2. Two to four quarts of nondehydrating fluid per day—recommended minimum for most school age children through adults
 - a. Adults 18 years and up—minimum 35 ml per kg body weight
 - (1) 150# adult needs 2.4 liters per day
 - (2) 250# adult needs 4 liters per day
 - (3) 350# adult needs 4.7 liters per day
 - b. Adolescents 11 through 17 years—minimum 40 to 60 ml per kg body weight
 - (1) 100# adolescent needs 1.8 liters per day
 - (2) 150# adolescent needs 2.7 liters per day
 - c. Young children 2 to 10 years—minimum 70 to 110 ml per kg body weight
 - (1) 30# child needs 1 liter per day
 - (2) 50# child needs 1.6 liters per day
 - (3) 75# child needs 2.4 liters per day
 - d. Infants 0 through 1 year—minimum 100 to 150 ml per kg body weight
 3. Water needs increase with any activity, especially stressful activity
 4. Only five safe sources in a survival situation
 - a. Boiled—Centers for Disease Control recommends at least a one-minute rolling boil
 - b. Prepackaged—packed in some survival craft
 - c. Filtered
 - d. Chemical treatment
 - e. Rainwater—if caught and stored in uncontaminated container
 - f. See *Land Safety and Survival* (Volume 3), Emergencies on Land unit for detailed information on treating water in a survival situation
 5. Good idea to carry water in comfort kit/abandon ship bag
 6. Probably no safe water if you are floating in salt water without a survival craft
 7. Do not drink seawater or urine
- F. Food—needed for energy in long-term situation
1. Don’t eat without water

2. Some survival craft have food rations
 3. Probably will have no food if floating without a survival craft
- G. Play—maintaining a positive mental outlook increases likelihood of survival
1. Think that you will be rescued
 2. Work toward your rescue
 3. Think about loved ones, things that give your life meaning
 4. Stay together to help each other physically and emotionally

Liferafts

- An inflatable boat is not a liferaft

Features (see Overhead #35)

A. Deployment

1. Liferafts usually are attached to vessel in fiberglass canister that self-deploys if vessel sinks
2. Liferafts are sometimes stored in soft pack resembling immersion suit bag and need to be manually inflated

B. Canopy

1. Provides protection from weather and seas
2. One or two entrances through canopy

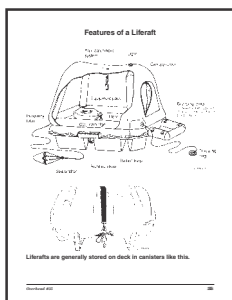
C. Water ballast system

1. On the bottom
2. Different manufacturers have different styles

D. SOLAS—approved (Safety of Life at Sea) liferafts since the early 1980s have an inflatable ramp to aid in entering from the water

E. Items to aid in survival

1. Different classifications of rafts have different items
2. Most rafts have rain catchment systems, special knives near one door, water-activated lights, line and ring to assist in getting people in raft, sea anchor (helps stabilize ride and limits drifting)



Overhead #35

Righting the liferaft (see Overhead #36)

A. Deployed liferaft can inflate right side up or upside down

B. Locate side with CO₂ cylinder—important to keep cylinder where it won't hurt anyone during righting process

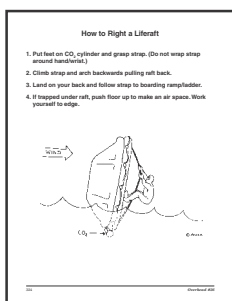
C. Position raft to use wind and waves to advantage

D. Grab righting strap on bottom of raft—do not wrap strap around hand

E. Stand on CO₂ cylinder, lean back

F. Land in water on back

G. If raft lands on you, create air pocket by raising hand under floor, then guide yourself out from under raft



Overhead #36

Boarding procedures

- A. Only one person boards at a time when practicing
- B. If possible, enter dry, directly from vessel

- C. Don't jump on canopy if people are in raft
- D. Beware of sharp objects
- E. Boarding from the water
 - 1. Without inflatable entry ramp
 - a. Bounce in the water using buoyancy of suit/PFD to gain momentum
 - b. Grab top tube, then straps inside raft to pull yourself in
 - c. Keep legs together and use a "seal" or "dolphin" kick
 - d. Once inside, assist others into raft
 - 2. With inflatable ramp
 - a. Swim onto boarding ramp
 - b. Enter liferaft
 - c. Once inside, assist others into raft

Exiting liferaft

- A. One person exits at a time when practicing
- B. Sit astride tubes at entrance
- C. Either slide onto boarding ramp and then slowly enter water or slide into water slowly with stomach facing and hands holding raft

Life in liferaft—use Seven Steps to Survival to establish priorities and actions

- A. Recognition—recognize that situation is still dangerous
- B. Inventory—make a list of things that can work for or against you
 - 1. Account for personnel
 - 2. Check for damage and correct problems, if possible
 - 3. Open equipment pack, inventory, and secure items—many survivors have lost unsecured items when raft flipped or wave washed through raft
 - 4. Give first aid as needed
 - 5. Gather floating objects
 - 6. Ensure sea anchor is deployed
- C. Shelter
 - 1. Secure canopy and doors
 - 2. Inflate floor if liferaft is so equipped
 - 3. Bail excess water
 - 4. Top off buoyancy tubes with air
 - 5. Try to empty water from immersion suit
- D. Signals
 - 1. Post a lookout and assign duties
 - 2. Check canopy lights
 - 3. Activate EPIRB/radio
 - 4. Tie to other liferafts
 - 5. Have flares and mirrors ready to use

E. Water

1. Take seasickness medication
2. Identify available water-gathering possibilities—most liferafts have rain catchment system
3. Decide on how to ration water
4. Drink water as soon as possible—you are probably already a bit dehydrated
5. Do not drink seawater or urine

F. Food

1. Decide on food rations
2. Do not eat food without drinking water

G. Play

1. Take measures to improve morale
2. Improve life in raft

Rescue Techniques for People in the Water

- Most people drown within 10 feet of safety
- Do not become another victim—you cannot help if you are in trouble!

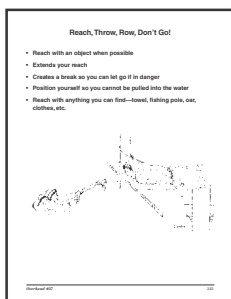
Reach, Throw, Row, Don't Go!

A. Reach (see Overhead #37)

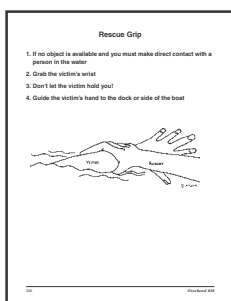
1. Use an object to reach person in the water whenever possible—towel, clothes, oars, fishing rod, etc.
 - a. Allows further reach
 - b. Creates a “break” between you and victim
2. Staying on shore or dock or in boat is safest for rescuers
3. Must position yourself so you cannot be pulled into the water
 - a. Lie flat on stomach
 - b. Hang onto something stable for support
4. If no object is available to reach with, grasp back of victim’s wrist and maintain control of victim’s hand (see Overhead #38)
 - a. Victim must never be in a position to grab you
 - b. Grab victim’s wrists without a “break”
 - (1) Only on someone smaller than you
 - (2) Small children should not do this
5. See recovery techniques below

B. Throw—if you cannot reach person, try throwing them an object that floats and, if possible, is tied to a rope (see Overhead #39)

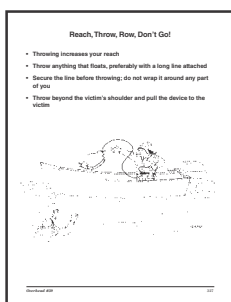
1. Increases rescue distance while allowing you to stay on shore or dock or in boat
2. Use ring buoy (Type IV PFD) if available
 - a. Keep ring buoy in areas where people are near the water
 - b. Some boats are required to carry one



Overhead #37



Overhead #38



Overhead #39

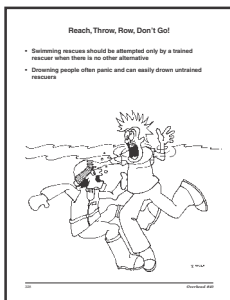
3. If ring buoy is not available, tie something that floats to a long line
 - a. Use spare PFDs, ice chests, plastic jugs, or other buoyant items
 - b. All boats should have a throwable rescue device onboard
4. Secure the line, but not to your person—be sure you don't get tangled in the line or you could be pulled into the water
5. If possible, make eye contact with victim before throwing—always do this when practicing
6. Throw rescue device beyond victim, then pull it to victim
 - a. Avoid hitting victim
 - b. Requires less throwing accuracy than aiming directly for victim
 - c. Allows victim to grab device as it is being pulled in, rather than swim to it
7. Pull victim to you
 - a. Use steady, continuous pulls
 - b. Victim may be weak due to hypothermia and unable to hold onto rescue device

C. Row

1. If you're in a boat, use oars to move boat closer, if possible
2. Be sure to keep propeller clear of victim

D. Don't Go (see Overhead #40)

1. Swimming rescues should be attempted only by trained rescuer when there is no other alternative
2. Drowning people often panic and can easily drown untrained rescuers



Overhead #40

Recovery techniques

A. Don't become a victim

B. Know your limits—wet clothing can add significant weight to victim

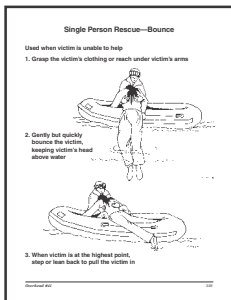
C. Rescue from a boat

1. More dangerous than from shore or dock
2. Approach victim slowly from downwind or downstream
 - a. Prevents boat from drifting onto victim
 - b. Allows greatest control over speed and steering
3. When near victim, make sure boat engine is in neutral and keep victim clear of propeller
4. Use Reach, Throw, or Row techniques to get victim to boat
5. Tow victim to shore if close
6. If shore is not close and if it can be done safely, assist victim into boat using recovery techniques below
7. Minimize risk of capsizing rescue vessel
8. Balance weight in boat to compensate for weight of victim coming onboard

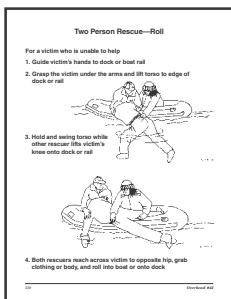
D. Recovery basics

1. Grasp back of both of victim's wrists—you maintain control and victim cannot grab you

2. Guide victim's hands to dock, boat rail, or other safe object—not you
3. For an alert victim who can help
 - a. Once victim is holding boat or dock, bring his/her elbow inside
 - b. Help victim bring one knee inside boat or onto dock
 - c. Grab victim's outside leg and roll him/her into boat or onto dock
 - d. This method helps you recover victim in a horizontal position, minimizing risk of a cardiac event
4. One rescuer with one victim who is unable to help (see Overhead #41)



Overhead #41



Overhead #42

- a. Grasp victim's clothing under arms
- b. Gently bounce victim, without submerging head, using his/her buoyancy to gain momentum
- c. When victim is at highest point above water, step or lean backward to pull him/her into boat or onto dock
5. Two rescuers with one victim who is unable to help (see Overhead #42)
 - a. Grasp victim under arms and hold him/her against boat or dock while other rescuer reaches for victim's leg and lifts victim's knee onto dock or boat rail
 - b. Both rescuers reach across victim, grab outside of victim's clothing or body, and roll him/her onto dock or into boat
6. Human chain—method of last resort
 - a. Requires many rescuers—all must have stable footing
 - b. Anchor the chain with one rescuer on shore in a stable position
 - c. Other rescuers don PFDs and form a chain by holding each other's wrists until victim is reached
 - d. Last person in chain reaches out to victim with an object and allows other rescuers to pull them to safety
 - e. Current and rough water can make this extremely dangerous

- More information on man overboard can be found in *Small Boat Safety and Survival* (Volume 4), Boating Emergencies unit

Ice Safety

Definitions

- A. Ice is frozen water—it often floats on liquid water, which is what makes it so dangerous
 1. Fresh water freezes at 32°F
 2. Salt water freezes at 29°F
- B. Ice is found year-round
 1. At high elevations throughout world, even on equator
 2. In areas near north and south poles
- C. Seven million cubic miles (a cubic mile is one mile long on each side) of fresh water is stored as ice in glaciers and ice caps
- D. Breakup = when ice breaks up, melts, and flushes out
- E. Cloudy/milky ice = color of ice made from snow that has been saturated with water and refrozen

- F. Cracks and sinking—situations that occur due to falling water levels in rivers, streams, and lakes
- G. Freeze-up = when ice begins to form
- H. Ice jams = ice chunks that catch in narrow or shallow areas in rivers
- I. Lead = any fracture or passageway through sea ice that is navigable by surface vessels (pronounced “leed”)
- J. Marsh ice = ice that forms on marshes
- K. Overflow = water that flows over ice from cracks, sinking ice, or pressure ridges
- L. Pack ice = any area of sea ice not attached to the shore
- M. Pressure ridges = ice pushed up from pressure
- N. River ice = ice that forms on rivers
- O. Sea ice = ice that forms on sea or ocean

Dangers of a fall through ice

- A. Drowning
 - 1. Cold water immersion leads to hypothermia and loss of ability to self-rescue
 - 2. Currents can overpower a person in the water and prevent rescue
 - 3. A leading cause of snowmachine-related death
- B. Hypothermia following rescue can be a life-threatening condition if not quickly treated

Ice is complex and highly changeable

- A. Children should not be expected to be able to accurately assess ice safety
- B. What is true at one time of the season may not be true at another
- C. What is true one year can be different the next
- D. Knowing your lake or river in all seasons helps in predicting ice stability
 - 1. Watch how and when freeze-up occurs
 - 2. Observe waterfowl—they keep water open and once they leave, ice will be thinner in that area
- E. Constant cold temperatures create the most stable ice

Rules for traveling on ice

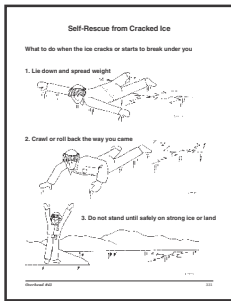
- A. Be suspicious of ice stability at all times
- B. Young children should always be with an adult who knows the ice
- C. Wear a PFD to help keep you afloat if you fall through the ice—float coats or flotation coveralls work best
- D. Have rescue gear with you—awls, picks, a stick, line, sheath knife, ski poles
- E. Safe travel on ice requires specialized training and local knowledge—use extreme caution and always check ahead with a pole when suspicious
- F. Check ice conditions prior to departure
 - 1. Conditions change quickly
 - a. Melting and refreezing can occur rapidly

- b. Refrozen ice may not be as strong as original
- 2. Previous tracks do not mean area is still safe
- G. Stay on safe ice—clear ice is the strongest form of ice
- H. Avoid dangerous ice
 - 1. Near inlets and outlets of lakes, and on main channels of rivers
 - 2. Over areas of vegetation
 - 3. Under cut banks of rivers and creeks
 - 4. During breakup ice can be very unstable
 - 5. Chemicals and pollutants weaken ice
 - 6. Cloudy/milky ice is not as strong as clear ice
 - 7. Cracks and sinking are very unstable
 - 8. Variable temperatures during freeze-up cause very unstable conditions
 - 9. Ice jams can cause flooding when they dam and when they break; are very unstable
 - 10. The larger the body of water the slower it is to cool
 - 11. Lead—open water or fractures through ice present obvious dangers
 - 12. Marsh ice—always unstable
 - 13. Overflow
 - a. Can be present on land around springs and seeps
 - b. Can be a hazard on rivers, lakes, and wet hillsides
 - c. Presence may or may not be obvious—may be hidden in overlying snow pack
 - d. Increased incidence of overflow during certain times
 - (1) Extreme cold—rivers can freeze to bottom, forcing groundwater to top through cracks
 - (2) Rapid temperature changes cause changes in water flow under ice, forcing water to surface
 - (3) Air pressure changes can force water to surface
 - (4) Check with local experts—some areas have known overflow locations
 - 14. Pressure ridges—potentially dangerous areas
 - 15. River ice
 - a. Is most dangerous in areas of fast-moving water—ice strength can be decreased by 15%
 - b. May form in chunks that are pushed up and jumbled together with weak ice in between
 - 16. Rocks and tree trunks absorb heat, weakening ice
 - 17. Sea ice
 - a. One of the most dangerous kinds of ice
 - b. Salt water takes longer to freeze than fresh water
 - c. Part of a very complex system with stability affected by the mixing of different levels of salinity, tidal action, and constant motion
 - d. A layer of fresh-water ice or snow can make things even more unpredictable

18. Slush may indicate overflow or melting from above or below, and may refreeze from top down, making it hazardous
19. Snow on ice can hide weak ice or hazardous overflow—watch for irregularity in snow cover; this may indicate overflow or presence of water
20. Water on ice may indicate melting, open area, crack, or overflow

Factors that can help if you fall through ice

- A. Wearing a PFD will keep you afloat
- B. Air trapped in clothes will provide some flotation
- C. Carry items that can assist you and others—ice awls, sheath knife, metal picks, ski poles

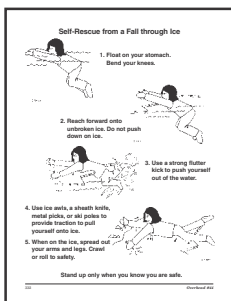


Overhead #43

Ice Rescue Techniques

Self-rescue from cracked ice (see Overhead #43)

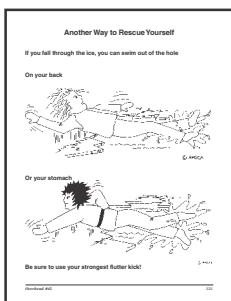
- A. Lie down immediately, distributing weight evenly by spreading arms and legs
- B. Crawl or roll to safety—go back the way you came, if possible
- C. Stand up only when you are sure you are safe



Overhead #44

Self-rescue from a fall through ice (see Overhead #44)

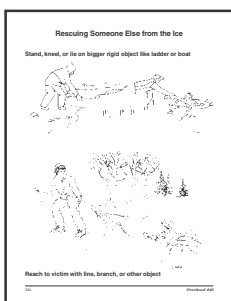
- A. Swim to edge of ice
- B. Reach forward onto unbroken ice surface
- C. Do not push down on ice
- D. Use a strong flutter kick to push yourself onto ice
- E. Use ice awls, a sheath knife, metal picks, or ski poles to provide traction to pull yourself onto ice
- F. If no traction aids, try swimming stroke on either stomach or back (see Overhead #45)
- G. If ice edge breaks, keep trying until thicker ice is reached
- H. Roll out of water and roll or crawl away from edge of ice until safe ice or shore is reached
- I. Stand up only when you are sure you are safe
- J. Begin immediate treatment for hypothermia



Overhead #45

Rescuing a victim (see Overhead #46)

- A. Young children should run for adult help if it is near and they will not endanger themselves
- B. Don't become a victim!
- C. Stay on land if possible and throw something to victim—use same kind of items discussed in rescuing someone from the water
- D. If you must be on the ice
 1. Be sure you have a PFD on
 2. Identify safe ice from which to launch rescue
 3. Spread body weight over as wide a surface area of safe ice as possible
 4. Stand, kneel, or lie on bigger rigid object like ladder or boat



Overhead #46

5. Reach to victim with line, branch, or other object
6. Form a human chain as last resort strategy for reaching victim
 - a. Use extreme caution and ensure rescuers stay on safe ice
 - b. Not appropriate for young children
 - c. Rescuers lie flat on ice and hold each other by ankles
 - d. First rescuer in line is firmly attached to shore or thick ice
 - e. Last rescuer remains on safe ice and extends object to victim
7. Pull victim to safety and immediately treat for hypothermia

Cold Water Near-Drowning (see Overhead #47)

Definitions

- A. Drowning is caused by suffocation from lack of oxygen
- B. Cold Water Near-Drowning
 1. This term is used because many cold water drowning victims submerged in cold water for up to one hour have been successfully revived without brain damage
 2. Cold water is defined as water less than 70°F (21.1°C)

Mechanism involved in cold water near-drowning not clearly understood

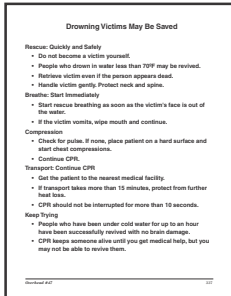
- A. Hypothermia theory
 1. When you become hypothermic, brain and major organs require less oxygen
 2. Results in net protective effect
- B. Mammalian diving reflex theory
 1. You can survive without oxygen for extended periods of time similar to how sea mammals stay under water for extended periods
 2. Contact of forehead with cold water triggers a slowing of metabolism and shunting of circulation away from extremities toward body core
 3. Theory is under study—much remains to be learned

Factors for survival

- A. Water temperature—the colder the better
- B. Cleanliness of water or liquid—the more contaminant-free the better
- C. Length of time submerged—shorter time periods increase likelihood of survival
- D. Age—younger victims are more likely to survive
- E. Quality of treatment—higher quality and timeliness of CPR improves likelihood of recovery
- F. Other injuries—complicate treatment and lessen possibility of survival
- G. Will to Survive—those trying to commit suicide usually succeed

Drowning stages

- A. Struggling
- B. Calm with swallowing movements



Overhead #47

- C. Vomiting with aspiration of fluid
- D. Seizures
- E. Death

Signs and symptoms

- A. Drowning victims may appear dead
- B. Acronym CCPPRR describes most cold water near-drowning victims
 - 1. Color—skin appears blue or pale
 - 2. Cold—skin is cold to touch
 - 3. Pulse—pulse appears to be absent
 - 4. Pupils—victim’s pupils may be fixed and dilated
 - 5. Respiration—appears to be absent
 - 6. Rigid

Treatment

- A. Be gentle and avoid rough movement or unnecessary handling—hypothermia makes victim vulnerable to heart rhythm disturbances
- B. Rescue victim
 - 1. First rule—do not become another victim
 - 2. Protect victim’s neck and spine (commonly injured in drowning accidents)
 - 3. Victim on surface of water
 - a. Retrieve in shallow water using wading assist
 - b. In deep water use skiff, implement such as boat hook, or safest swimming approach possible
 - 4. Victim below water surface
 - a. Note position last seen
 - b. Call for help
 - c. Direct divers to position
 - 5. Horizontally lift victim from water if maneuver does not delay rescue
- C. Start CPR
 - 1. If victim has been in water for less than one hour, or if timing is unknown, start CPR
 - 2. Not necessary to perform special maneuvers to remove water from lungs
- D. Prevent further heat loss
 - 1. If more than 15 minutes from medical facility, remove wet clothing without interrupting CPR
 - 2. Insulate victim from further heat loss—do not forget to insulate under victim
- E. Transport victim to a medical facility
 - 1. Continue CPR while en route
 - 2. Cold water near-drowning victims should never be considered dead before they have been rewarmed to normal body temperature
- F. Aftercare

1. Treat as your state emergency medical services (EMS) hypothermia treatment guidelines dictate
2. Even patients who regain consciousness during resuscitation should be taken to medical facility for observation as drowning victims often have cardiac and pulmonary complications

Prevention

- A. Wear a PFD!
- B. If immersed in water follow the Stay Rules!

Cold Water Survival: Activities Guide

- The activities in this volume are sequential, and each unit assumes knowledge of the material in the preceding unit.
- Activities are arranged by topic in the same order as the Teacher Information.
- Within a topic activities are organized from easiest to most difficult.
- Detailed Alaska Content Standards are located at the end of each activity's procedures.
- Times needed for activities are approximate.
- Many activities contain true stories; be sensitive to the possibility that they could be written about your students' relatives or friends.
- **AMSEA** This symbol means the equipment is available to borrow from AMSEA.

Topic: Physiological Effects of Cold Water Immersion

Activity	Objectives	Standards
1. Physiological Effects of Cold Water Immersion and the Will to Live Use video footage and discussion p. 189	<ul style="list-style-type: none">• List five physiological effects cold water immersion has on their bodies• Identify a survivor's will to live from an actual cold water emergency	Language Arts Science Skills for a Healthy Life

Topic: Survival Factors in Cold Water Emergencies

Activity	Objectives	Standards
2. Survival Factors in Cold Water Use video footage, graphs, and news stories p. 192	<ul style="list-style-type: none">• Explain the correlation in cold water between survival time and activity, cooling rates and clothing, and survival time and body fat	Language Arts Mathematics Science Skills for a Healthy Life
3. Secrets to Staying Alive Longer in Cold Water Use video footage, discussion, and word puzzles p. 207	<ul style="list-style-type: none">• List the Stay Rules and apply them to a real life situation	Language Arts Mathematics Skills for a Healthy Life

Topic: Seven Steps to Survival

Activity	Objectives	Standards
4. Seven Steps to Survival Use a word search p. 211	<ul style="list-style-type: none">List the Seven Steps to Survival	Language Arts Skills for a Healthy Life
5. Survival! Use vocabulary crossword and a true survival story p. 214	<ul style="list-style-type: none">Apply the Seven Steps to Survival to a real situationList eight emotions that can accompany a vessel's sinkingDescribe a real life survival situation	Language Arts Geography Skills for a Healthy Life
6. Life on a Wooden Raft Use a news story p. 220	<ul style="list-style-type: none">Apply the Stay Rules to a real situationList three of the Seven Steps to Survival	Language Arts Skills for a Healthy Life

Topic: Liferrafts

Activity	Objectives	Standards
7. Abandon Ship! Use a real or simulated liferaft, video footage, and news stories p. 225	<ul style="list-style-type: none">Apply the Seven Steps to Survival to life in a liferaftIdentify five characteristics or components of a liferaft that help people survive	Language Arts Skills for a Healthy Life

Topic: Rescue Techniques for People in the Water

Activity	Objectives	Standards
8. Cold Water Survival Skills on Dry Land Use video footage and immersion suit p. 229	<ul style="list-style-type: none">Correctly don an immersion suitCorrectly don a PFDDemonstrate the HELP positionDemonstrate the Huddle positionDemonstrate the elbow lockDemonstrate the chain swim	Language Arts Skills for a Healthy Life

<p>9. Reach, Throw, Row, Don't Go!</p> <p>Use various throwing devices p. 234</p>	<ul style="list-style-type: none"> • Demonstrate three techniques for rescuing someone in the water 	<p>Language Arts Skills for a Healthy Life</p>
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Topic: Ice Safety

Activity	Objectives	Standards
<p>10. Ice Terms</p> <p>Use video footage and crossword puzzle p. 238</p>	<ul style="list-style-type: none"> • Define 10 ice terms • Describe the color of safe ice and dangerous ice 	<p>Language Arts Geography Skills for a Healthy Life</p>
<p>11. Ice Safety</p> <p>Use video footage, research, and practice ice rescue techniques p. 243</p>	<ul style="list-style-type: none"> • List where ice first starts to form and to thaw on lakes and rivers • List five safety rules to follow when on ice • Identify four hazards in an area in students' community commonly used for ice activities 	<p>Language Arts Science Geography Skills for a Healthy Life Cultural Standards</p>

Topic: Ice Rescue Techniques

Activity	Objectives	Standards
<p>12. Saved from the Ice</p> <p>Use video footage, worksheets, and practice ice rescue techniques p. 245</p>	<ul style="list-style-type: none"> • Demonstrate a self-rescue from cracked ice • Demonstrate a self-rescue from a fall through the ice • Demonstrate a rescue of someone who has fallen through the ice 	<p>Language Arts Science Geography Skills for a Healthy Life</p>

Topic: Cold Water Near-Drowning

Activity	Objective	Standards
<p>13. When All Else Fails, Do You Die?</p> <p>Use video footage and discussion p. 247</p>	<ul style="list-style-type: none"> • State that people can be resuscitated if they have been submerged in cold water for up to one hour 	<p>Language Arts Science Skills for a Healthy Life</p>

Topic: Culmination/Summary Activities

Activity	Objectives	Standards
14. Culmination Game Use activity stations p. 248	<ul style="list-style-type: none">• Correctly don a PFD• Correctly don an immersion suit• List five features of a liferaft that are beneficial in a survival situation• Demonstrate Reach, Throw, Row, Don't Go to rescue someone	Language Arts Mathematics Skills for a Healthy Life
15. Pool Activity Practice skills in a pool p. 251	<ul style="list-style-type: none">• Demonstrate cold water survival skills introduced in this unit	Science Skills for a Healthy Life
16. Cold Water Activity—Cold Water Stations Practice skills in a cold water setting p. 269	<ul style="list-style-type: none">• Demonstrate cold water survival skills introduced in this unit• Explain how the HELP and Huddle positions prolong survival• Explain one way alcohol negatively impacts water activities• Explain what happens when a 911 call is placed• List three pieces of emergency medical equipment carried by local emergency medical services response team	Science Geography Skills for a Healthy Life
17. Post Pool/Cold Water Activity Summary Debrief pool and/or cold water activities p. 287	<ul style="list-style-type: none">• Explain three things they learned at the pool or cold water activity• State five safety rules or hazards from the pool or cold water activity• Write a thank-you note explaining what they appreciated about the help they received at the pool or cold water exercise	Language Arts Skills for a Healthy Life Arts

Physiological Effects of Cold Water Immersion and the Will to Live

Time: 30 minutes

Overview

Use video footage to discuss the physiological aspects of cold water immersion.


Objectives

After completing this activity, students should be able to:

1. List five physiological effects cold water immersion has on their bodies.

2. Identify a survivor's will to live from an actual cold water emergency.

Materials

- *Cold Water Casualty* video, Olympic swimmer segment (7 minutes) 
- One per student, Student Handout #1 **Effects of Cold Water Immersion and the Will to Live**

Procedure

1. Explain to students that they will be examining how cold water immersion affects people physically and identifying a survivor's will to live.
2. Distribute and discuss Student Handout #1. Explain that they will fill it out while they are watching the video.
3. Show the *Cold Water Casualty* video, Olympic swimmer segment. (Start where the Olympic gold medallist is getting dressed for his experiment, stop at the end of the woman's description of the helicopter crash into the sea.)

4. Lead a discussion to include:
 - This procedure is dangerous, not to be tried by students.

Note: Air bubbles visible when the man was under water illustrate the ability of clothes to hold air and keep you afloat when you first fall in the water.
 - The will to survive and how the woman focused on the needs of children, giving her a stronger reason to survive.
5. Have students finish Student Handout #1.

This activity addresses Alaska Content Standards:

Language Arts A-1 Effective writing, A-3 Demonstrate speaking skills, B-1 Meaning from written, oral, and visual text, D-1-D, Analyzing information

Science A-14 Living things and their environments, D-3 Practical applications of scientific knowledge

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed choices, B-1 Risk and consequence, B-2 Effective communication, D-2 Safe and healthy environments

Name: _____ Date: _____

Effects of Cold Water Immersion and the Will to Live

Answer the following questions while watching the *Cold Water Casualty* video.

1. Who were the two people used as “guinea pigs” in the test tank?
2. How cold was the water?
3. How long did the man hold his breath?
4. What is cold water shock?
5. List five things that can happen to your body in cold water shock.
6. Was the silver medal swimmer able to control her stroke for 10 minutes?
What happened to her?
7. Why is it dangerous to swim in cold water?
8. How would alcohol consumption affect cold water immersion?
9. What did the woman who survived the helicopter crash do that helped her survive?

Effects of Cold Water Immersion and the Will to Live

1. Who were the two people used as “guinea pigs” in the test tank?
An Olympic gold medallist and an Olympic silver medallist
2. How cold was the water?
10°C / 50°F
3. How long did the man hold his breath?
10.8 seconds
4. What is cold water shock?
Sudden immersion in cold water
5. List five things that can happen to your body in cold water immersion.
Pain
Hyperventilation
Gasp/aspirate water
Vessels constrict in extremities
Heart beats faster
Blood pressure goes up, which can cause heart problems and stroke
Loss of sense of direction
6. Was the silver medal swimmer able to control her stroke for 10 minutes?
What happened to her?
No. She couldn't maintain coordination because she was becoming hypothermic.
7. Why is it dangerous to swim in cold water?
The physiological processes discussed in #5 above. Also, hypothermia occurs faster when swimming (moving water by the high heat loss areas) than when in HELP or Huddle.
8. How would alcohol consumption affect cold-water shock?
Blood vessels would dilate so hypothermia would occur faster. Poor coordination and judgment would affect your ability to help yourself.
9. What did the woman who survived the helicopter crash do to help her survive?
Focused on her concern for the children and Megan, giving her a stronger reason than her own existence to survive.

Survival Factors in Cold Water

Time: three class periods

Overview

Explain survival factors, high heat loss areas, and the Stay Rules using video footage, graphs, and news stories.

Objectives

After completing this activity, students should be able to explain the correlation between:

1. Survival time and activity level in cold water.
2. Cooling rates and clothing in cold water.
3. Survival time and body fat in cold water.

Materials

- One per student, Student Handouts #1 **Survival Time in Cold Water**; #2 **Man Drowns after Boat Capsizes in Lake**, #3 **Thimbleberry Tragedy**, #4 **Cooling Rates and Clothing**, #5 **Survival Time and Body Fat**, #6 **Swimmer on Her Way across Bering Strait**, #7 **How Did She Swim for So Long?**
- Overheads #4 **Survival Time and Body Fat**, #26 **Survival Time vs. Water Temperature**, and #32 **Cooling Rates and Clothing**

Procedure

Day 1

1. Explain to students that they will be investigating how water temperature and activity affect survival time in cold water.
2. Ask the class what happens when a person is immersed in cold water. Get predictions, guesses, and ideas. This is a review of Activity #1 **Physiological Effects of Cold Water Immersion and the Will to Live**.
3. Distribute Student Handout #1.
4. Show Overhead #26. Study the graph together and identify important information.
5. Have students complete Student Handout #1.
6. Distribute and explain Student Handouts #2 and #3.
7. Have students complete Student Handout #3.

Day 2

1. Explain to students that they will be investigating how clothing affects survival time in cold water.

2. Distribute Student Handout #4.
3. Show Overhead #32. Study the graph together and identify important information.
4. Have students complete Student Handout #4.

Day 3

1. Explain to students that they will be investigating how body fat affects survival time in cold water.
2. Distribute Student Handout #5.
3. Show Overhead #4. Study the graph together and identify important information.
4. Distribute and explain Student Handouts #6 and #7.
5. Have students complete Student Handout #7.

Variation

Divide class into three groups and assign each part to a different group. At the end, each group reports to the class on their assignments.

This activity addresses Alaska Content Standards:

Language Arts B-1 Meaning from written text, B-2 Investigations in written materials, B-3 Relate to practical purposes, C-5 Project collaboration, D-2 Evaluating information

Mathematics A-3 Arithmetic and computation, A-4 Analyze data with graphs and tables, A-6 Statistics and data analysis, B-3 Using mathematics in real-life situations, C-1 Using graphs and charts, D-1 Analyzing situations, D-2 Drawing logical conclusions, D-3 Mathematical reasoning, D-4 Deductive

reasoning, E-1 Exploring problems using mathematics

Science A-4 Observable natural events, A-14 Living things and their environments, A-15 Using local knowledge, D-1, 3 Practical applications of scientific knowledge, D-6 Using reasoned decisions

Skills for a Healthy Life A-1 Personal well-being, A-3 Injury prevention, A-6 Making informed choices, B-1 Risk and consequence

Survival Time in Cold Water

Use the graph Survival Time vs. Water Temperature to answer the following questions.

1. What technique results in the longest survival time?

2. About how long are people expected to live if they are floating, treading water in 40°F water while wearing a PFD?

3. Approximately how long can you survive alone in 35°F water if:

a. You assume the HELP while wearing a PFD?

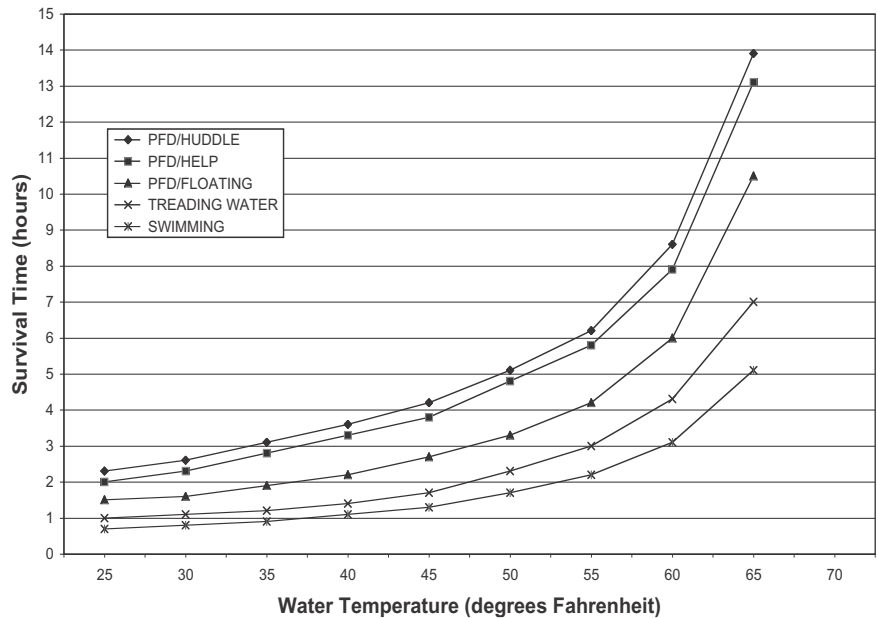
b. You swim?

4. In cold water, is it better to swim or to tread water? Support your answer using data illustrated in the graph.

5. How much longer can a person expect to survive in 40°F water in the HELP position wearing a PFD as compared to treading water wearing a PFD?

6. As the water temperature increases, what happens to survival time?

7. Using evidence from the graph, defend the following statement, “Deliberate inactivity increases survival time.”



Survival Time in Cold Water

1. What technique results in the longest survival time?

Huddle with a PFD

2. About how long are people expected to live if they are floating, treading water in 40°F water while wearing a PFD?

Slightly more than 2 hours

3. Approximately how long can you survive alone in 35°F water if:

- a. You assume the HELP position while wearing a PFD?

Slightly less than 3 hours

- b. You swim?

About one hour

4. In cold water, is it better to swim or to tread water? Support your answer using data illustrated in the graph.

Tread water (treading water consistently shows increased survival time over swimming over the range of water temperatures shown)

5. How much longer can a person expect to survive in 40°F water in the HELP position wearing a PFD as compared to treading water wearing a PFD?

About one hour

6. As the water temperature increases, what happens to survival time?

Survival time increases with increases in water temperature

7. Using evidence from the graph, defend the following statement, “Deliberate inactivity increases survival time.”

The three highest survival time lines on the graph are variations of floating which is deliberate inactivity. Swimming is the most active activity shown on the graph and has the shortest survival times. Treading water, the next most active, has the next shortest survival times. Note: Survival time increases in the floating positions with increased insulation of the high heat loss areas. The more effective the insulation, the longer the survival time.

Man Drowns after Boat Capsizes in Lake

By Shannon Haugland, Sentinel Staff Writer

A Sitka man drowned Monday evening when his aluminum skiff overturned on Thimbleberry Lake.

The body of David Wayne Lindstrom, 36, was recovered by members of the Sitka dive rescue team at 9:30 a.m. today about 100 feet from the southeast shore of the lake. The lake, which is about 1,000 feet across at its widest point, is located up a short trail off Sawmill Creek Road.

The search team was dispatched at 8:50 p.m. Monday after Lindstrom's nephew, Dale Lindstrom, 21, arrived at the police station to report the accident. Police said the nephew was soaking wet when he arrived.

Sitka police reported Dale Lindstrom told them his uncle had been trout fishing on the lake about 250 feet from shore when his uncle stood up in the boat, causing it to overturn.

Police said Dale Lindstrom reported that the two men initially stayed with the boat, and tried to reach the shore while using it as flotation.

But after failing to make progress they abandoned the boat and tried to swim ashore.

Dale Lindstrom told police that when he reached shore safely his uncle was missing. He said he searched for a brief time before returning to his vehicle and driving to the police station.

Police notified the Sitka Volunteer Fire Department, and members of the search and rescue and dive rescue teams were sent out to search the lake and surrounding area.

Dale Lindstrom was taken by an ambulance to Mt. Edgcumbe Hospital, where he was treated for hypothermia and released.

The search was suspended because of darkness after two hours. It resumed at 4 a.m. today, and after five and a half hours of searching, a diver found Lindstrom in the lake at a depth of 23 feet.

A U.S. Coast Guard helicopter also participated in the search Monday by flying over the area with fire department search and rescue volunteers.

Name: _____ Date: _____

Thimbleberry Tragedy

1. Summarize the article in a complete paragraph.

2. Based on your knowledge of cold water survival, list some factors that may explain why Dale survived when his uncle didn't.

3. What might have helped save David's life?

Thimbleberry Tragedy

1. Summarize the article in a complete paragraph.

Summary should include:

- *One person drowned, one person survived when they capsized their boat 250 feet from shore.*
- *Initially they stayed with the boat and tried to push to shore, but then abandoned the boat to swim for shore.*
- *The drowned man disappeared while swimming to shore.*

2. Based on knowledge of cold water survival, list some factors that may explain why Dale survived when his uncle didn't.

Maybe: he had a stronger will to live, he didn't become hypothermic as quickly, he was a stronger swimmer.

3. What might have helped save David's life?

Wearing a PFD, not standing up in boat, staying with the boat after it capsized, having a radio or cell phone to call for help.

Cooling Rates and Clothing

Use the graph below to answer the following questions.

1. In what kind of clothing would you cool the fastest?

2. If your body temperature was 98.6°F at the start, what would your temperature be in °C after one hour wearing this clothing?

Hint:

$$^{\circ}\text{C} = \frac{5}{9}(\text{F}-32).$$

a. In calm water?

b. In rough water?

3. In what kind of clothing would you cool the slowest?

4. If your body temperature were 98.6°F at the start, what would your temperature be in °C after one hour wearing this clothing?

a. In calm water?

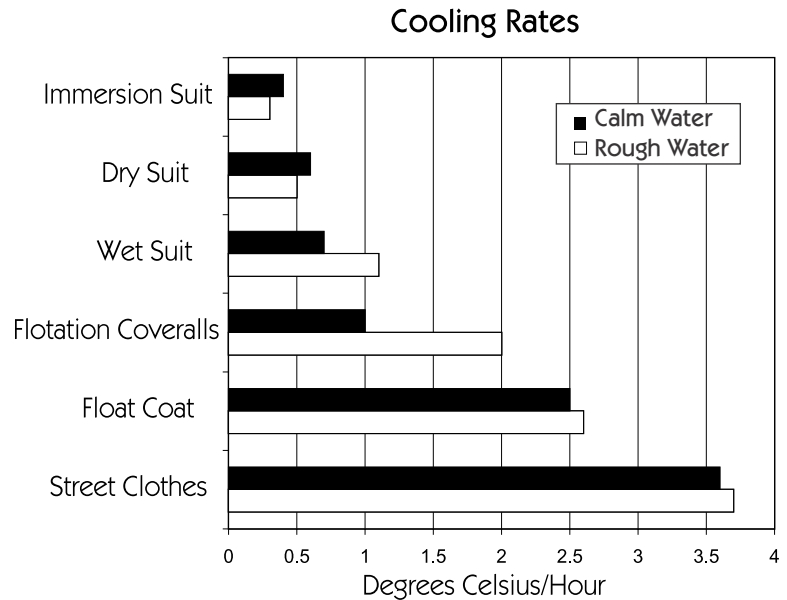
b. In rough water?

5. Give two examples of what you could wear in cold water to keep you the driest.

6. Compare the cooling rate when wearing flotation coveralls in calm water to the cooling rate when wearing them in rough water. What is the difference?

7. If you were riding in a skiff, which kind of PFD would you want to wear?

8. Explain your choice using information from the graph.



Cooling Rates and Clothing

1. In what kind of clothing would you cool the fastest?

Street clothes

2. If your body temperature were 98.6°F at the start, what would your temperature be in °C after one hour wearing this clothing:

- a. In calm water?

Approximately 33.4°C

- b. In rough water?

Approximately 33.3°C

3. In what kind of clothing would you cool the slowest?

Immersion suit

4. If your body temperature were 98.6°F at the start, what would your temperature be in °C after one hour wearing this clothing:

- a. In calm water?

Approximately 36.6°C

- b. In rough water?

Approximately 36.7°C

Note: The reason the suit insulates better in rough water is because it takes exercise to keep your head out of rough water and immersion suits insulate so well that they trap that body heat generated by exercise.

5. Give two examples of what you could wear in cold water to keep you the driest.

Immersion suit and dry suit

6. Compare the cooling rate when wearing flotation coveralls in calm water to the cooling rate when wearing them in rough water. What is the difference?

In rough water you cool twice as fast as in calm water (convection)

7. If you were riding in a skiff, which kind of PFD would you want to wear?

Answers will vary, but immersion suit is not appropriate.

8. Explain your choice using information from the graph.

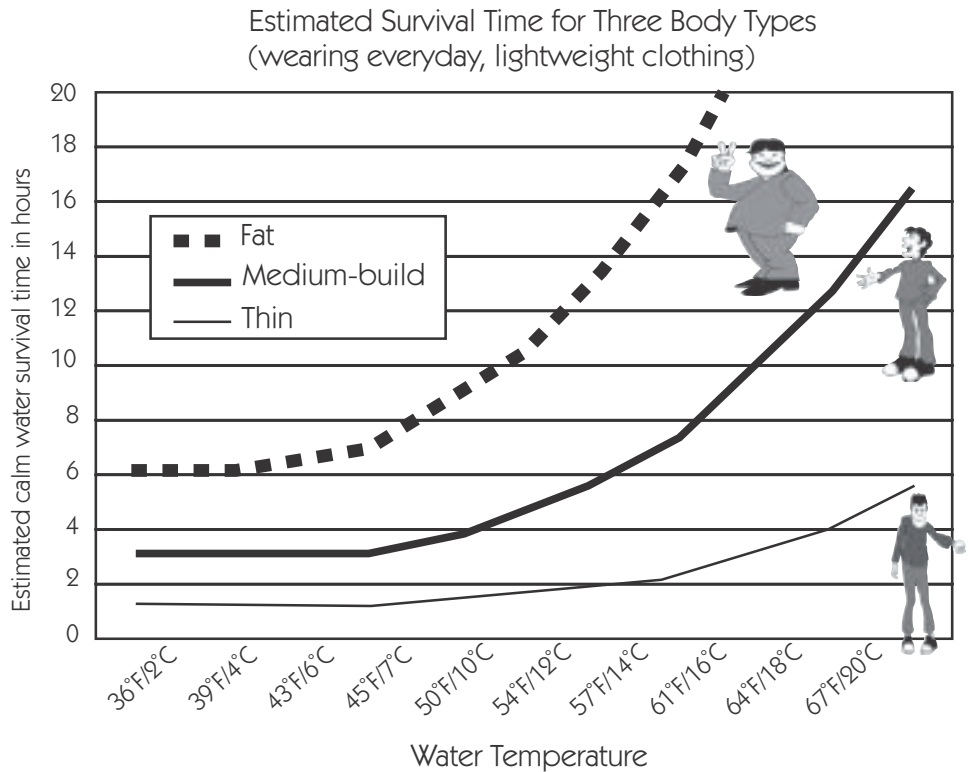
Answers will vary.

Name: _____ Date: _____

Survival Time and Body Fat

Using the graph below, answer the following questions.

- In 45°F (7°C) what is the estimated survival time for:
 - A person with low body fat?
 - A person with medium body fat?
 - A person with high body fat?



- What can you do to extend your survival time in cold water?

- Will everyone survive just the way the chart shows? (Refer to the video *Cold Water Casualty*.)

Source: National Hyperbaric Center, Aberdeen, Scotland

Survival Time and Body Fat

1. In 45°F (7°C) what is the estimated survival time for:
 - a. A person with low body fat?
1 hour
 - b. A person with medium body fat?
3 hours
 - c. A person with high body fat?
About 7.5 hours
2. Which type of body build protects better against cold water?
Heavy
3. What can you do to extend your survival time in cold water?
Get as much of my body out of the water as possible, wear clothing that insulates well when wet, wear a PFD that provides good hypothermia protection, assume the HELP and Huddle (if with others), protect high heat loss areas, stay still, gain weight.
4. Will everyone survive just the way the chart shows? (Refer to the video, *Cold Water Casualty*.)
No. The will to live plays a significant role in survival; people who have a reason to live beyond their own existence survive longer. Body fat, cardiovascular fitness, and health also play a role.

Swimmer on Her Way across Bering Strait

LITTLE DIOMEDE, Alaska (AP)—Endurance swimmer Lynne Cox, researchers and reporters piled into Eskimo walrus-skin boats Friday to reach the start of her swim from American to Soviet territory in the icy Bering Strait.

The entire village of 100 turned out to see her off as the two skin boats motored toward cliffs just south of town. Adults cheered and children dropped red and blue balloons in the water.

It was foggy and drizzly, and the Soviet island of Big Diomedede, 2.7 miles to the west could not be seen from Little Diomedede. The water was calm but cold—39 degrees Fahrenheit.

“The water’s flat enough to get across,” project coordinator Joe Coplan said Friday morning. “There’s a little rain. The wind is pretty calm. The visibility is OK.” Cox was to start from the south end of Little Diomedede Island on the American side of the strait to compensate for tides and currents. Although the distance across the international date line to Big Diomedede Island is only 2.7 miles, Cox may have to swim four to six miles to actually get across.

The Soviet Union, in clearing the way for the swim, said Thursday it would not require Cox or her party to have visas for the trip.

The Soviets indicated they would escort Cox from the date line to their island. Two Soviet vessels were in the area, and two large tents were set up on the shore.

Coplan said he would be carrying a plaque from Alaska Gov. Steve Cowper and gifts of black bread, salt, tobacco, and candy for the Soviets.

The Soviets’ willingness to cooperate with the effort capped a two-year effort by Cox to make the swim.

She spent the past several weeks in the northwestern Alaska town of Nome swimming in the 54-degree water of Norton Sound to prepare herself for what she expected to be a two and a half hour ordeal.

The effort is part adventure and part scientific research. Accompanying physicians hoped to learn more about the body’s ability to withstand cold.

“It’s not just a question of physiology,” British physiologist Bill Keating said Friday as Cox made her final preparations. “It’s a question of her making herself do the things that are needed to survive.”

“There’s a great deal of planning and coolness needed, and the sheer determination,” Keating said. “Let’s face it, there’s not that many people who would want to face the discomfort and effort of a swim of this sort.”

It’s not the first time Cox has been tested in chilly water. She came up with the idea of the Bering Strait swim after swimming in the Strait of Magellan and the waters along the Aleutian Islands.

Water temperatures there are 40° plus, so she stepped up her regimen with a two and a half hour swim in the 40° waters off Iceland and a half-hour jaunt in the 37° waters of Alaska’s Glacier Bay.

Doctors and scientists say the 5-foot, 6-inch Cox is able to cope with the cold because an estimated 40 percent of her 209-pound body weight is fat, which serves as a sort of wet suit to insulate her.

Second, her aerobic capacity is estimated to be equal to that of a world-class marathon runner, enabling her to swim for long periods without burning up too much energy.

The third way the human body copes with cold is by shivering. But Cox says she's never shivered, not even after her stint in Glacier Bay. When she swam there in 1985, the lead boat had to push ice out of the way for her, yet when she finished, her core body temperature was the same as when she entered the water.

Cox has set several records for crossing the English Channel and has made pioneering swims in remote spots around the world.

She began her swimming career in southern California. She lives in Los Alamitos, about 40 miles south of Los Angeles.

Used with permission from the Associated Press.

Name: _____ Date: _____

How Did She Swim for So Long?

1. Summarize the article in a complete paragraph.

2. How long did Lynne Cox expect to be in the water? Look at the survival time graph. In 39°F water, how long would someone expect to survive swimming?

3. Why does Lynne Cox survive in situations where most people would die?

How Did She Swim for So Long?

1. Summarize the article in a complete paragraph.

Summary should include:

- *In 39°F water, a 5 foot 6 inch, 209 pound woman, Lynne Cox, swam from Little Diomed Island to Big Diomed Island in the Bering Strait.*
- *Tides and wind affected her starting point and the actual distance she swam, which was probably between four to six miles rather than the 2.7 mile distance between the two islands.*
- *Lynne Cox trained for several weeks by swimming in 54°F water in Nome, Alaska.*
- *She expected the swim to take 2.5 hours.*
- *Previously she trained or swam in cold water in the English Channel, Iceland, the Straits of Magellan, and Glacier Bay (37°F water, the coldest).*
- *Partly a research project. Able to do this because about 40% of her body weight is fat that insulates her plus her aerobic capacity is equal to a world-class marathon runner. She doesn't shiver.*

2. How long did Lynne Cox expect to be in the water? Look at the survival time graph. In 39°F water, how long would someone expect to survive swimming?

She expected to be in the water approximately 2.5 hours. In 39°F water the expected survival time is approximately one hour.

3. Why does Lynne Cox survive in situations where most people would die?

Her body fat content is high, she is in excellent physical shape, her will to live (determination) is high.

Secrets to Staying Alive Longer in Cold Water

Time: 15-25 minutes

Overview

Use video footage, discussion, and a word puzzle to review the Stay Rules as they relate to cold water survival.

Objective

After completing this activity, students should be able to list the Stay Rules and apply them to a real life situation.

Materials

- *Casualties at Sea, Cold Water Casualty*, or *Titanic* videos [AMSEA](#)
- One per student, Student Handouts #1 **Secrets to Staying Alive Longer in Cold Water** and #2 **Stay Rules on the Titanic**
- Overheads #17 **HELP—Heat Escape Lessening Position**, #17 **Huddle Position**, #22 **Chain Swim**, #23 **Elbow Lock**, #27 **Stay Rules**, #28 **Stay with the Boat**, #29 **Stay Afloat**, #30 **Stay Dry**, #31 **Stay Still**, #33 **Stay Together**, and #35 **Features of a Liferaft**

Procedure

1. Explain to students that they will be learning the Stay Rules as a way to increase their survival time in cold water.
2. Show either the Cape Beaver and Margaret Jane segment (5 minutes) of the *Casualties at Sea* video, the clip of the Olympic swimmers immersed and swimming in cold water from the *Cold Water Casualty* video (4 minutes), or the clip of Rose and Jack in the cold water from *Titanic* (15 minutes).
3. Distribute and have students complete Student Handout #1.
4. Use Overheads #17, #18, #22, #23, #27-#31, #33, and #35 to discuss each of the Stay Rules. Include how each could be implemented.
5. Distribute and have students complete Student Handout #2.

This activity addresses Alaska Content Standards:

Language Arts A-1 Effective writing, B-1 Meaning from written text

Mathematics A-3 Arithmetic and computation

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed choices, B-1 Risk and consequence

Name: _____ Date: _____

Secrets to Staying Alive Longer in Cold Water

Use the code at the bottom of the page to decipher the Stay Rules. These rules help you stay alive longer in cold water.

19 20 1 25 23 9 20 8 20 8 5 2 15 1 20.

19 20 1 25 1 6 12 15 1 20.

19 20 1 25 23 1 18 13.

19 20 1 25 4 18 25.

19 20 1 25 19 20 9 12 12.

19 20 1 25 20 15 7 5 20 8 5 18.

19 20 1 25 19 15 2 5 18.

These are the 19 20 1 25 18 21 13 5 19.

1 = A	6 = F	11 = K	16 = P	21 = U
2 = B	7 = G	12 = L	17 = Q	22 = V
3 = C	8 = H	13 = M	18 = R	23 = W
4 = D	9 = I	14 = N	19 = S	24 = X
5 = E	10 = J	15 = O	20 = T	25 = Y
				26 = Z

Name: _____ Date: _____

Stay Rules on the Titanic

Read the following quote and answer the question at the end.

From The Water Lover's Guide to Marine Medicine by Paul Gill

“Charles Joughin (pronounced YOU-wing), chief baker on the *Titanic*, had an intuitive understanding of how to survive cold water immersion:

The deck was now listing too steeply to stand on, and Joughin slipped over the starboard rail and stood on the actual side of the ship. He worked his way up the side . . . until he reached the white-painted steel plates of the poop deck. He now stood on the rounded stern

end of the ship, which had swung high in the air some 150 feet above the water. . . . (He) casually tightened his lifebelt . . . (and) was beginning to puzzle over his position when he felt the stern beginning to drop under his feet—it was like taking an elevator. As the sea closed over the stern, Joughin stepped off into the water. He didn't even get his head wet. He paddled off into the night. . . . For over an hour he bobbed about, moving his arms and legs just enough to keep upright. . . . (Then) they pulled him in (to a lifeboat).”

Originally from A Night to Remember by Walter Lord.

1. Which of the Stay Rules did Charles Joughin use?

Stay Rules on the Titanic

1. Which of the Stay Rules did Charles Joughin use?
Stay with Boat (as long as possible), Stay Afloat, Stay Still

Seven Steps to Survival

Time: 20 minutes

Overview

Use a word search to introduce the Seven Steps to Survival.

Objective

After completion of this activity students should be able to list the Seven Steps to Survival.

Materials

- One per student, Student Handout #1 **Seven Steps to Survival**
- Optional—Overhead #34 **Seven Steps to Survival**

Procedure

1. Explain to students that they will be introduced to the Seven Steps to Survival as a way to increase their likelihood of surviving an emergency.
2. Show Overhead #34 or write the Seven Steps to Survival on the board and explain the meaning of each.
3. Distribute Student Handout #1 for homework.

This activity addresses Alaska Content Standards:

Language Arts B -1 Meaning from written text, D-1-D Analyzing information

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed choices, B-1 Risk and consequence, D-2 Safe and healthy environments

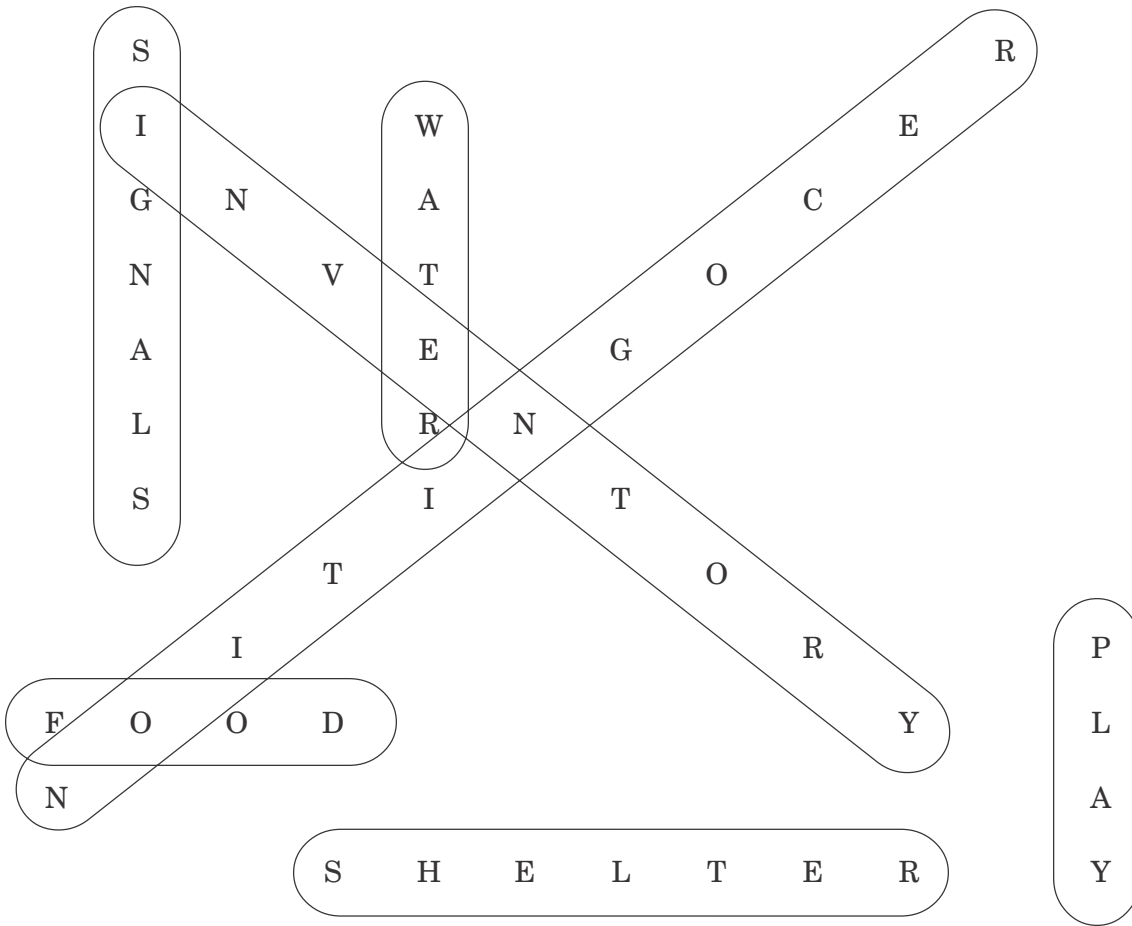
Name: _____ Date: _____

Seven Steps to Survival

Find and circle each of the Seven Steps to Survival in the table below. Be sure you look in all directions.

A	J	S	C	B	O	B	H	C	E	I	D	R
G	S	H	E	G	R	Y	E	S	B	R	N	E
S	I	I	T	W	E	G	Z	H	E	A	I	J
E	G	N	Y	A	C	F	A	C	G	S	T	C
O	N	E	V	T	G	O	O	R	Y	I	I	O
W	A	Z	J	E	F	G	N	A	O	G	O	I
A	L	I	A	R	N	E	S	I	G	N	A	N
G	S	V	L	I	F	T	F	U	A	Q	U	R
S	K	E	T	F	B	D	O	K	F	O	D	L
V	N	I	O	M	J	F	O	R	C	N	P	Z
F	O	O	D	A	S	I	G	N	Y	A	L	G
N	W	N	I	N	H	J	N	A	L	S	A	M
G	Z	A	S	H	E	L	T	E	R	E	Y	O
J	F	H	L	X	L	A	H	K	V	J	S	O
P	S	J	G	W	T	J	E	T	I	T	R	S

Seven Steps to Survival



Survival!

Time: 120 minutes

Overview

Complete a vocabulary crossword and relate the Seven Steps to Survival to a true survival story.


Objectives

After completing the activity students should be able to:

1. Apply the Seven Steps to Survival to a real situation.

2. List eight emotions that can accompany a vessel's sinking.
3. Describe a real life survival situation.

Materials

- *117 Days Adrift*, by Maurice Bailey 
- One per student, Student Handouts #1 **117 Days Adrift Vocabulary Words**, #2 **117 Days Adrift Crossword**, and #3 **117 Days Adrift Questions**
- Map of world or globe

Procedure

Day 1

1. Explain to students that over the next few days they will be examining a real life survival situation, and in order to do that they need to know some nautical vocabulary.
2. Distribute Student Handout #1. Write these vocabulary words on the board, and pronounce each one for students.
3. Distribute and have students complete Student Handout #2.

Day 2

1. Explain to students that they will be determining which of the Seven Steps to Survival a couple used when their boat sank.
2. Either read aloud or have students read pages 12-31 in *117 Days Adrift*, using Student Handout #1 for reference. Use the map or globe to orient students to where the story occurs.
3. Review the reading with the class.
4. Distribute and have students complete Student Handout #3.
5. Review and discuss answers.

This activity addresses Alaska Content Standards:

Language Arts A-1 Effective writing, B-1 Meaning from written text, D-2 Evaluating information

Geography A-1 Use maps and globes, B-1 Geographic characteristics of place

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed choices, B-1 Risk and consequence, C-5 Effects of attitude and behavior, D-2 Safe and healthy environments

117 Days Adrift Vocabulary Words

Abaft = behind, toward the stern (back) of the boat

Abeam = at right angles to the keel of the boat

Aft = toward the stern of a boat

Anti-fouling = refers to the paint used on the bottom of the boat to inhibit the growth of sea life

Astern = behind a boat

Bilge = the lowest point of a vessel's interior

Bow = the boat's front

Cabin sole = the floor of the cabin

Celestial = having to do with the stars

Chart = map of the ocean

Dinghy = a small vessel, usually auxiliary to a larger vessel

Foredeck = front deck

Galapagos = Ecuadorian islands with a unique ecosystem, located on the equator west of the mainland

Galley = the cooking area on a boat

Headsail = any of several sails set in the forward part of the boat (forward of the mast)

Heel a boat = to tip a boat, lean to one side

Jib sheet = a line (rope) used to control a forward sail

Keel = the backbone of a boat, running along the bottom, that provides steering and stability

Knot = unit of speed; one knot is about 1.15 miles an hour

Latitude = geographic distance north and south of the equator measured in degrees

Line = a rope used aboard a vessel

Longitude = geographic distance east or west of the Prime Meridian (0°) that runs through Greenwich, England

Luff = the forward edge of a sail

Paid out = to let out

Panama = small Central American country that has a canal joining the Atlantic and Pacific Oceans

Port side = the boat's left side

Sea anchor = material shaped like a parachute or cone with an opening at the tip, used to slow a liferaft's drift

Sextant = A precision navigating instrument used for measuring angles in celestial navigation

Sheet = line (rope) used to control sails

Starboard side = the boat's right side

Stern = the back of a boat

Tins = cans

Trade winds = Reliable winds from the northeast in the Northern Hemisphere; used in the past by trading ships

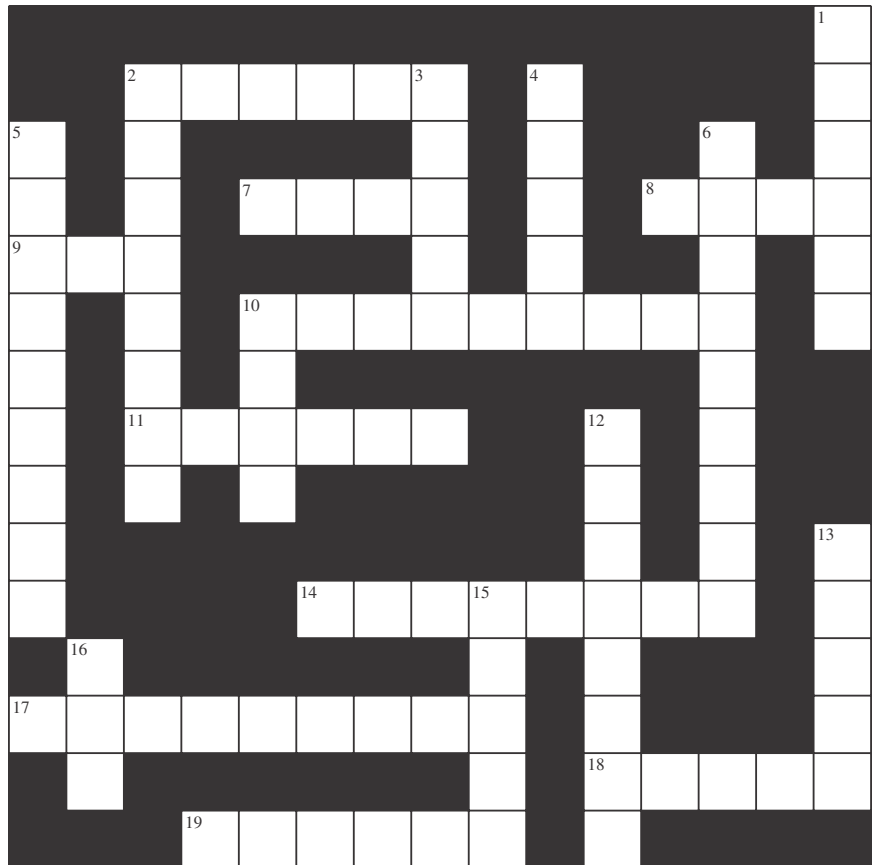
Trim a sail = to adjust a sail with sheets (ropes) and certain other rigging lines

Whilst = while

117 Days Adrift Crossword

Across

2. Small Central American country that has a canal joining the Atlantic and the Pacific Oceans
7. A rope in use aboard a vessel
8. The backbone of the boat, running along the bottom, that provides steering and stability
9. Toward the stern of the boat
10. To adjust a sail with sheets (ropes) and certain other rigging lines
11. A small vessel, usually auxiliary to a larger vessel
14. A line (rope) used to control a forward sail
17. Geographic distance east or west of the Prime Meridian (0°) that runs through Greenwich, England.
18. Map of the ocean
19. Behind a boat



Down

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. The cooking area on a boat 2. The boat's left side 3. At right angles to the keel of a boat 4. Unit of speed; one is about 1.15 miles an hour 5. Material shaped like a parachute or cone with an opening at the tip, used to slow a liferaft's drift | <ol style="list-style-type: none"> 6. To tip a boat; to lean to one side 10. Cans 12. Front deck 13. Line (rope) used to control sails 15. The back of a boat 16. The boat's front |
|--|--|

117 Days Adrift Crossword



Name: _____ Date: _____

117 Days Adrift Questions

1. Describe what caused the hole in the *Auralyn*.
2. How did the Baileys try to plug the hole and stop the water from rising inside their boat?
3. How long did it take for the *Auralyn* to sink and what did they do during that time?
4. List eight emotions the Baileys felt during their ordeal.
5. Describe what they did in terms of the Seven Steps to Survival.
6. Compare the liferaft and the dinghy.
7. Write an essay describing an experience you have had on the water that was frightening or threatening. What was your reaction? How could you have used the Seven Steps to Survival to help in that situation?

117 Days Adrift Questions

1. Describe what caused the hole in the *Auralyn*.
A whale hit the boat. Maurice and Maralyn Bailey thought it was a whale that had been injured by some whalers who were in the area.
2. How did the Baileys try to plug the hole and stop the water from rising inside their boat?
First they used the pumps. Then they used a spare sail and pumped. Then they tried blankets.
3. How long did it take for the *Auralyn* to sink and what did they do during that time?
Over 50 minutes. They were very focused in actions. After trying to plug the hole, they collected essentials (water, food, and gear) and their emergency kit to take onto the dinghy and into the raft, then launched the liferaft and the dinghy.
4. List eight emotions the Baileys felt during their ordeal.
Denial and/or disbelief over several different developments, sadness, grief (crying), shock, despair, devastation, heartbreak, guilt (tied with denial at one point), hope, determination, depression, ready to give up.
5. Describe what they did in terms of the Seven Steps to Survival.
Recognition: Initially they took a few minutes to recognize they had a problem and they still denied it could be life-threatening for minutes after. They went through recognition again when the boat had disappeared.
Inventory: While they tried to plug the hole, mentally they were taking inventory. Maralyn suggested using the blanket when the sail wasn't doing the job. After the boat sank they did an extensive inventory.
Shelter: Maralyn urged Maurice to move into the raft to protect him from the sun. They took both their dinghy and liferaft with them. No mention of clothing.
Signals: Nothing consciously done, but keeping both dinghy and liferaft together makes them a bigger target. Their emergency kit may have contained signal material. Note: It appears that they traveled with no means of electronic communication.
Water and Food: They were conscious of this need and collected all the water containers and food they could. They should have had a desalinating pump in their gear.
Play: Involved play when they talked of potential rescuers and Maralyn tried several times to talk about reasons to feel hopeful. She also brought along three books.
6. Compare the liferaft and the dinghy.
The liferaft was better because it had a canopy and a sea anchor but it was more difficult to navigate.

Life on a Wooden Raft

Time: 20-30 minutes

Overview

Apply the Stay Rules and the Seven Steps to Survival to a news story.

Objectives

After completing this activity, students should be able to:

1. Apply the Stay Rules to a real situation.

2. List three of the Seven Steps to Survival.

Materials

- One per student, Student Handouts #1 **Children Saved from Bay: Rescuers Find Siblings Adrift, 2 Miles Out** and #2 **Life on a Wooden Raft**
- Overhead #27 **Stay Rules**

Procedure

1. Explain to students that they will apply the Stay Rules and Seven Steps to Survival to a real situation.
2. Review the Stay Rules by showing Overhead #27.
3. Distribute Student Handouts #1 and #2.
4. Have students read Student Handout #1 and complete Student Handout #2.
5. Discuss answers.

This activity addresses Alaska Content Standards:

Language Arts A-1 Effective writing, A-3 Demonstrate speaking skills, B-1 Meaning from written text, D-1-A Personal experience and prior knowledge

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed choices, B-1 Risk and consequence, D-2 Safe and healthy environments

Children Saved from Bay

Rescuers find siblings adrift, 2 miles out

By K.C. Myers and John Leaning, Staff Writers

BREWSTER—They did the Hokey Pokey and the Tango. They told jokes and they laughed because “laughing keeps you warm.” When the state Environmental Police and the Dennis harbor master boat found their wooden raft after almost two and a half hours, the children, ages 9 and 12, were two miles out to sea.

Benjamin Gonnella’s temperature had dropped to sub-normal 97.3 degrees. His sister, 12-year-old Rachel, admitted she really panicked. But they were both safe.

The two students of St. James School/Parish in Syracuse, N.Y., had hopped aboard a 10-by-10-foot wooden raft owned by the Cape Cod Sea Camps at about 2:40 p.m. yesterday.

Rachel said they were tired, and needed to rest on the raft before swimming back to shore. But while basking in the hot sun, they did not notice that they were drifting. When they turned to swim home, home was suddenly far away. “The land started looking really small,” Rachel said.

Ed Barber, sailing master at the Cape Cod Sea Camps, said the wooden raft had been securely anchored to the bottom, attached by half-inch nylon line that in turn was tied to a quarter-inch chain coupled to a large anchor.

After their rescue, Ben admitted that on Thursday while playing around the raft at low tide, he had untied the rope attaching the raft to the anchor.

Barber said the rafts were stenciled with “Keep Off” warnings, and were for use only by summer campers, who arrive June 25.

Norma Gonnella, an English and literature tutor at Onondaga Community College, watched her kids swim to the raft before she dozed off. But she woke with a start on the bayside beach.

James Gonnella, her husband, told her the children and their raft were gone.

“I ran to get my cell phone and dialed 911,” Norma Gonnella said. Her call set off a chain reaction of from police, fire and U.S. Coast Guard personnel.

She said the Brewster police were “phenomenal.” Within minutes they had the U.S. Coast Guard dispatched with a helicopter and had posted officers along the coastline with binoculars. Two Brewster rescue officers in the Dennis harbor master’s boat and a boat from the environmental police both went after the children from Sesuit Harbor.

Barber, who helped in the search, spotted them heading toward Eastham. He said that through his binoculars, the children and raft appeared as a small dot in the distance.

At first, Rachel said they were having fun coasting over the waves. But as the southwest wind pushed them out further, the waves got bigger. They started lapping over the raft menacingly, making the kids even colder. “We ripped off a board to try to row,” Rachel said.

They considered swimming for shore, but it was just too far. “We started to get cold so we did the Hokey Pokey and the Tango,” Ben said. “We did our funky voices.” “Laughing keeps you warm,” Rachel said.

The two also prayed and were getting pretty close to panicking, when the two rescue boats arrived with warming space blankets and a quick ride home. It was around 5 p.m.

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Name: _____ Date: _____

Life on a Wooden Raft

1. List each of the Stay Rules below, then list events from the story in Student Handout #1 next to the appropriate rule. You may not find an event for every rule.

2. What did the children do right in terms of surviving?

3. What could they have done better?

4. Which of the Seven Steps to Survival did they use?

5. Explain the importance of having someone watch you while you swim.

Life on a Wooden Raft

1. List each of the Stay Rules below. Then list events from the story in Student Handout #1 next to the appropriate rule. You may not find an event for every rule.
Stay With the Boat: their boat was their raft, which they stayed with
Stay Afloat: stayed on the raft
Stay Dry: stayed on the raft
Stay Still:
Stay Warm: moved around, laughed, kept themselves out of the water
Stay Together: did that by not trying to swim to shore, but could have huddled and shared body warmth
Stay Sober: they did not use alcohol or drugs
2. What did the children do right in terms of surviving?
Stayed with the raft; made a wise decision not to try to swim to shore (if they had tried to swim to shore they almost certainly would have been overcome by hypothermia and drowned), worked at keeping their spirits up by laughing and playing, tried to help themselves by making a paddle/oar
3. What could they have done better?
They should not have untied the raft in the first place! They should have paid more attention to where shore was so they could have signaled for help, and they could have tried to huddle to conserve body heat.
4. Which of the Seven Steps to Survival did they use?
Recognition, Inventory, Signals (parents kind of watching was like a float plan), Play
5. Explain the importance of having someone watch you while you swim as it relates to this story.
The fact that their parents were watching them, although not as attentively as they should have, probably saved their lives. Otherwise, the children might not have been found soon enough to save them from hypothermia.

Abandon Ship!

Time: 15-30 minutes

Overview

Board a real or simulated liferaft and review its characteristics using video footage and news stories.

Objectives

After completing this activity, students should be able to:

1. Apply the Seven Steps to Survival to life in a liferaft.
2. Identify five characteristics or components of a liferaft that help people survive.

Materials

- Student Handout #1 **U.S. Coast Guard Rescues Five from Burning Vessel**
- One per group, Student Handout #2 **Abandon Ship!**
- One or more liferaft equipment kits [AMSEA](#)
- Per group, enough chairs, desks, and sheets to make simulated liferafts
- Overhead #35 **Features of a Liferaft**
- Optional—Liferaft and liferaft inflator [AMSEA](#)
- Optional—*Inflatable Life Rafts* video (1 minute) [AMSEA](#)

Procedure

Before Class

1. Inflate the liferaft (if you have one).
2. Set up additional simulated liferaft areas using chairs, desks, and sheets. There should be one raft for each group of students.
3. Assign each liferaft some equipment from the liferaft equipment kit.

During Class

1. Explain to students that they will be applying the Seven Steps to Survival to life in a liferaft and identifying liferaft parts and equipment that assist in survival.
2. Read Story #1. Discuss the elements of the liferaft that contributed to the crew's survival.

3. Point out features of a liferaft to the class using the inflated liferaft or Overhead #35.
4. Optional—Show the first minute of the launching segment of the *Inflatable Liferafts* video to illustrate an actual launching of a liferaft in its canister.
5. Divide the class into groups. Have each group select a recorder.
6. Distribute Student Handout #1 and have students complete it in a liferaft with the canopy closed.
7. Review the answers.

This activity addresses Alaska Content Standards:

Language Arts A-1 Effective writing, B-1 Meaning from written and oral text, C-3 Group decision making, D-2 Evaluating information

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed choices, B-1 Risk and consequence

U.S. Coast Guard Rescues Five from Burning Vessel

By Doug Fraser, Staff Writer

AIR STATION CAPE COD—At 6:10 a.m. yesterday, Lt. Bill Bellatty woke to the sound of his alarm clock and phone ringing simultaneously. By 6:35 a.m., he and a crew of three were lifting off the landing strip at Air Station Cape Cod, headed out to sea to rescue five fishermen on a burning vessel off Monomoy Island.

They were barely aloft when they got the word the fishermen were abandoning ship, jumping into a liferaft in 40-knot winds and 18-foot seas in the infamous Pollock Rip. They took off in total darkness, but in the half-hour it took to fly to the rip, the dawn illuminated the slate-gray ocean below.

As they approached the last known location of the vessel, Bellatty and his co-pilot, Capt. Joe Palfy, could see a mile-long column of black smoke lying flat across the water, blown out by a steady crosswind. Flying over the *Michelle and Joyce*, a 70-foot trawler out of Fairhaven, they could see the aft third of the boat ablaze.

About a mile to the north, they saw the orange liferaft bearing Capt. Darryl Cutter of Hyannis and crew members George Adams of Eastham, Jimmy Hyosch and John Hjorth, both from New Bedford, and Michael Casta of Hyannis crest a wave and drop out of sight. It was around 6 a.m. when the fishermen radioed the U.S. Coast Guard that their Eastern-rigged wooden trawler had caught fire, reportedly from a heater in the boat's engine room. At the same time Bellatty and his crew were preparing for takeoff, a bottle of compressed gas, possibly acetylene, exploded on the vessel. Cutter had his crew don survival suits, inflated their liferaft and called the U.S. Coast Guard on his cell phone, informing them they were abandoning their vessel.

With no radio on the liferaft for him to communicate with the men below, Bellatty decided not to lower a basket. Instead he lowered a rescue swimmer, Petty Officer Greg Brown, into the 18-foot, 40-degree seas.

Brown swam to the raft and briefed the fishermen on the rescue procedure. Within 15 minutes, flight mechanic/hoist operator Rick Gallant had all five fishermen and Brown on board the helicopter.

When the fishermen first called, a 40-foot rigid hull inflatable was dispatched from Chatham along with 47-foot and 44-foot rescue vessels from Station Brant Point on Nantucket. The speedy, brand-new 47-footer arrived first, after the helicopter had come and gone.

The *Michelle and Joyce* was still on fire, eventually burning right down to the waterline. Yesterday afternoon, it was still afloat, five miles off Monomoy, and drifting north-northeast.

All five fishermen were flown back to Air Station Cape Cod and were in good shape. None was injured or required hospitalization.

U.S. Coast Guard personnel credited their ability to don survival suits and having a functioning liferaft with saving their lives.

“At that temperature, without survival suits, they would have had four to six minutes of functional consciousness,” Bellatty said.

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Name: _____ Date: _____

Abandon Ship!

1. List the Seven Steps to Survival in order.

2. How would each apply to life in a liferaft?

3. List the items you find that would help you survive.

4. List the items you wish you had with you.

Abandon Ship!

1. List the Seven Steps to Survival in order.

Recognition

Inventory

Shelter

Signals

Water

Food

Play

2. How would each apply to life in a liferaft?

Recognition: recognize you are still in danger

Inventory: account for people, gather up and inventory equipment onboard, give first aid as needed

Shelter: secure canopy and doors, bail excess water, inflate floor and top off buoyancy tubes as needed, check for and repair damage to liferaft, empty water out of immersion suit, wring out wet clothes

Signals: post lookout, check signal lights, activate EPIRB/radio, ready flares

Water: take seasick medications, prepare to collect rainwater, decide on water rations, if no water don't eat

Food: decide on food rations, eat

Play: take measures to improve morale, improve your life in raft

3. List the items you find that would help you survive.

Depends on what you have made available. Could include sea anchor, heaving line, paddles, inflating and bilge pump, sponge, bailer, leak stoppers, repair kit, safety knife, flashlight, flares, signal mirror, radio, seasick pills, rainwater storage bags, water, food, first aid kit, whistle, fishing kit

4. List the items you wish you had with you.

Could be any of the above that weren't present.

Cold Water Survival Skills on Dry Land

Time: 45-60 minutes

Overview

View video footage, don an immersion suit, and practice survival behavior in the classroom.

Objectives

After completing this activity, students should be able to:

1. Correctly don an immersion suit.
2. Correctly don a PFD.
3. Demonstrate the HELP position.
4. Demonstrate the Huddle position.
5. Demonstrate the elbow lock.
6. Demonstrate the chain swim.

Materials

- *When Seconds Count* video (16 minutes) **AMSEA**
- PFDs and immersion suits of appropriate sizes for one-fourth of class **AMSEA**
- Immersion suit zipper wax **AMSEA**
- One per group, Student Handout #1 **Skills Assessment** and Student Handout #2 **Trivia Questions**
- Overheads #17 **HELP—Heat Escape Lessening Position**, #18 **Huddle Position**, #19 **Donning an Immersion Suit**, #22 **Chain Swim**, and #23 **Elbow Lock**

Procedure

1. Explain to students that they will be practicing cold water survival skills with PFDs and immersion suits.
2. Watch the last 3 minutes of the *When Seconds Count* video—the segment showing cold water survival techniques in immersion suits. Review which of the Stay Rules each addresses.
3. Show Overheads #17 and #18. Demonstrate the HELP and Huddle positions using PFDs.
4. Show Overhead #19. Demonstrate the technique for donning an immersion suit.
5. Show Overheads #22 and 23. Demonstrate the elbow lock and chain swim with immersion suits. Explain that the chain swim is used with immersion suits, and the elbow lock can be used with either PFDs or immersion suits.
6. Break the class into four groups. Groups A and B will be on one side of the room, groups C and D on the other.
7. Distribute and review Student Handout #1.
8. Group A will practice the PFD skills, and Group B will be their assessors. Group C will practice the immersion suit skills, and Group D will be their assessors.
9. When Group A is finished, they switch places with Group B and reverse roles. Likewise with Groups C and D.
10. When Groups B and D are finished, Groups A and B move to immersion suits, and Groups C and D go to PFDs. Repeat the process until all practice all the techniques.
11. Review key points.
12. Distribute and have students complete Student Handout #2.

This activity addresses Alaska Content Standards:

Language Arts B-1 Meaning from written and oral text, C-3 Group decision making

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed choices, B-1 Risk and consequence

Name: _____ Date: _____

Skills Assessment

PFD

Check off skills completed by each student.

Name	Don Correctly	HELP	Huddle	Elbow Lock

Immersion Suit

Check off skills completed by each student.

Name	Don Correctly	Elbow Lock	Chain Swim

Trivia Questions

1. Pick out the PFD that can cover all of your high heat loss areas.
2. Which position will keep you warmer and why—the HELP or Huddle?

3. Using a PFD helps you with which Stay Rules?

4. How is an immersion suit different from other PFDs?

5. The HELP position assists you with which Stay Rules?

6. The Huddle position assists you with which Stay Rules?

Trivia Questions

1. Pick out the PFD that can cover all of your high heat loss areas.
Flotation coveralls with hood, float coat with hood and beaver tail, immersion suit
2. Which position will keep you warmer and why—the HELP or Huddle?
Huddle, because you will share heat with other people and slow down moving water in front of you.
3. Using a PFD helps you with which Stay Rules?
Stay Afloat, Stay Still, Stay Warm, Stay Together, Stay Dry if immersion suit
4. How is an immersion suit different from other PFDs?
It keeps you dry.
5. The HELP position assists you with which Stay Rules?
Stay Still and Stay Warm
6. The Huddle position assists you with which Stay Rules?
Stay Still, Stay Warm, Stay Together

Reach, Throw, Row, Don't Go!

Time: 30-40 minutes

Overview

Students practice rescue techniques using a variety of throwing devices.

Objective

After completing this activity, students should be able to demonstrate three techniques for rescuing someone in the water.

Materials

- Student Handout #1 **One Dies, Two Missing in Pacific** or Student Handout #2 **Mother Drowns While Attempting to Rescue Son**
- Overheads #37 **Reach**, #38 **Rescue Grip**, #39 **Throw**, and #40 **Don't Go**
- Throwing device with 30 feet of line attached—use life rings, buoyant cushions, buoys, and/or large plastic jugs with lids on and a little water inside (lightweight items are easiest for children to throw) [AMSEA](#)
- Towel, jacket, or other material to use as a link between the rescuer's hands and the victim
- Duct tape or chalk

Procedure

Before Class

1. Draw or tape a line to the floor, and an "X" 10 to 20 feet in front of the line.

During Class

1. Explain to students that they will be practicing throwing an object that would float to a "victim."
2. Read Story #1 or #2 to the class. Discuss the importance of keeping yourself safe and not going into the water to rescue someone. If you read about the mother, discuss the difficulty in not going if the victim is your own child or if it is someone you know.
3. Introduce Reach, Throw, Row, Don't Go! by showing Overheads #37-#40.
4. Play "Save the Swimmer."
 - One person is chosen to be the swimmer and he or she stands on the X.
 - Everyone else lines up behind the line.
 - The first person in line is the thrower. The thrower makes sure the line is secured, makes eye contact with the swimmer, and tosses the device beyond the X, not at the swimmer.

- If the device can be pulled across the X or the swimmer can reach it without moving off the X, the swimmer holds onto the item and the thrower pulls him or her in.
- If the swimmer cannot reach the device, the thrower tries again. Each thrower is given three opportunities to save the swimmer. At the end of three turns, the thrower moves into the swimmer's position, and the swimmer moves to the end of the line.
- Once the swimmer is pulled within a few feet of the rescuer, the rescuer holds out the "link" for the swimmer to grab and completes the rescue.
- Play continues until everyone has had a chance to save the swimmer.

Variation

Break into two teams and play simultaneously.

This activity addresses Alaska Content Standards:

Language Arts B-1 Meaning from written and oral text

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury

prevention, A-6 Making informed choices, B-1 Risk and consequence, D-1 Responsible decisions, D-2 Safe and healthy environments

One Dies, Two Missing in Pacific

SHELTER COVE, Calif. (AP)—A Canadian woman drowned and two teenagers were missing after they were swept into the Pacific Ocean while on a high school sightseeing trip.

The woman, believed to be a chaperone, slipped in the surf and was pulled out to sea Saturday near Shelter Cove, about 200 miles north of San Francisco, the U.S. Coast Guard said. Four males in the group jumped in after her, according to spokesman Michael Burgess.

The U.S. Coast Guard recovered the body of the woman, who was in her 40s, and rescued a 17-year-old male and a 37-year-old male. Both were taken to the Mendocino Coast Hospital where their conditions were not immediately available.

The U.S. Coast Guard continued to search Sunday for the two others, both 17 years old.

The five people were from a Calgary high school, but their names were not released.

Used with permission from the Associated Press.

Mother Drowns While Attempting to Rescue Son

FAIRBANKS (AP)—A Fairbanks woman drowned while trying to save her son during a fishing trip near here, the Alaska State Troopers say.

Tina Crawford, 35, jumped into the water near the junction of the Chena and Tanana rivers Monday evening after her son—who was playing in the water with several others—stepped into a hole and was swept downstream, said Trooper Freddie Wells.

She was swept away as well, he said.

The pair floated together for a short time, but the mother apparently lost her grip and slipped from the boy's sight, Wells said.

Others in the fishing group ran to a phone to summon help.

Rescuers found the boy treading water on a sandbar about a half-hour later. But Crawford failed to regain consciousness after being pulled from mid-channel about a mile downstream, Wells said.

Chena Goldstream Volunteer and the University of Alaska fire departments, Airport Public Safety and troopers responded to the call.

Four riverboats combed the waters while a trooper helicopter and a private helicopter searched from the sky.

That the two were found was mostly a matter of luck, University Fire Dept. Capt. Pat Mead said. The river is wide in that area, with many channels and islands, he said.

Used with permission from the Daily Sitka Sentinel.

Ice Terms

Time: 90 minutes

Overview

Use video footage and a crossword puzzle to introduce ice terms.


Objective

After completing this activity, students should be able to:

1. Define 10 ice terms.

2. Describe the color of safe ice and dangerous ice.

Materials

- Set of **Ice Terms cards** (make from Template #1)
- One per student, Student Handouts #1 **Ice Terms** and #2 **Ice Terms Crossword**
- *Taken by Surprise* video (29 minutes) 

Procedure

1. Explain to students that they will be learning about ice.
2. Watch the *Taken by Surprise* video (29 minutes).
3. Distribute Student Handout #1 and the meanings of the words.
4. Distribute and have students complete Student Handout #2.
5. Quiz students on the terms using the Ice Terms cards.

This activity addresses Alaska Content Standards:

Language Arts B-1 Meaning from written text, D-1-D Analyzing information

Geography B-1 Geographic characteristics of place, B-6 Making informed decisions about place, C-3 Regional environments, F-6 Geography across the curriculum

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed choices, B-1 Risk and consequence, D-2 Safe and healthy environments

Ice Terms Cards

Cut into individual cards so students will be able to match each term with its definition.

Breakup	Time when the ice breaks up, melts, and flushes out making ice very unstable; a time to stay off all ice	Freeze-up	Time when ice begins to form; variable temperatures cause very unstable conditions; a time to stay off all ice
Clear ice	The strongest form of ice	Overflow	Water that flows over ice from cracks and sinking ice, or pressure ridges; can be present on land around springs and seeps
Cloudy/milky ice	Color of ice made from snow that has been saturated with water and refrozen; not as strong as clear ice	Pressure ridge	Ice pushed up from pressure; potentially dangerous areas
Cracks and sinking	Situations that occur in ice due to falling water levels in rivers, streams, and lakes	River ice	Most dangerous in areas of fast moving water; may form in chunks that are pushed up and jumbled together with weak ice in between
Ice jam	Ice chunks that catch in narrow or shallow areas, causing flooding; very unstable and dangerous	Sea ice	One of the most dangerous kinds of ice; saltwater takes longer to freeze than fresh water and because of water movement is potentially dangerous
Pack ice	Any area of sea ice not attached to the shore	Unstable ice	Unsafe ice
Lead	Any fracture or passageway through sea ice that is navigable by surface vessels		

Ice Terms

Some commonly used ice terms are listed below.

Breakup = Time when the ice breaks up, melts, and flushes out, making ice very unstable; a time to stay off all ice

Clear ice = The strongest form of ice

Cloudy/milky ice = Color of ice made from snow that has been saturated with water and refrozen; not as strong as clear ice

Cracks and sinking = Situations that occur in ice due to falling water levels in rivers, streams, and lakes

Ice jam = Ice chunks that catch in narrow or shallow areas, causing flooding; very unstable and dangerous

Pack ice = Any area of sea ice not attached to the shore

Lead = Any fracture or passageway through sea ice that is navigable by surface vessels (pronounced “leed”)

Freeze-up = Time when ice begins to form; variable temperatures cause very unstable conditions; a time to stay off all ice

Overflow = Water that flows over ice from cracks and sinking ice, or pressure ridges; can be present on land around springs and seeps

Pressure ridge = Ice pushed up from pressure; potentially dangerous areas

River ice = Most dangerous in areas of fast-moving water; may form in chunks that are pushed up and jumbled together with weak ice in between

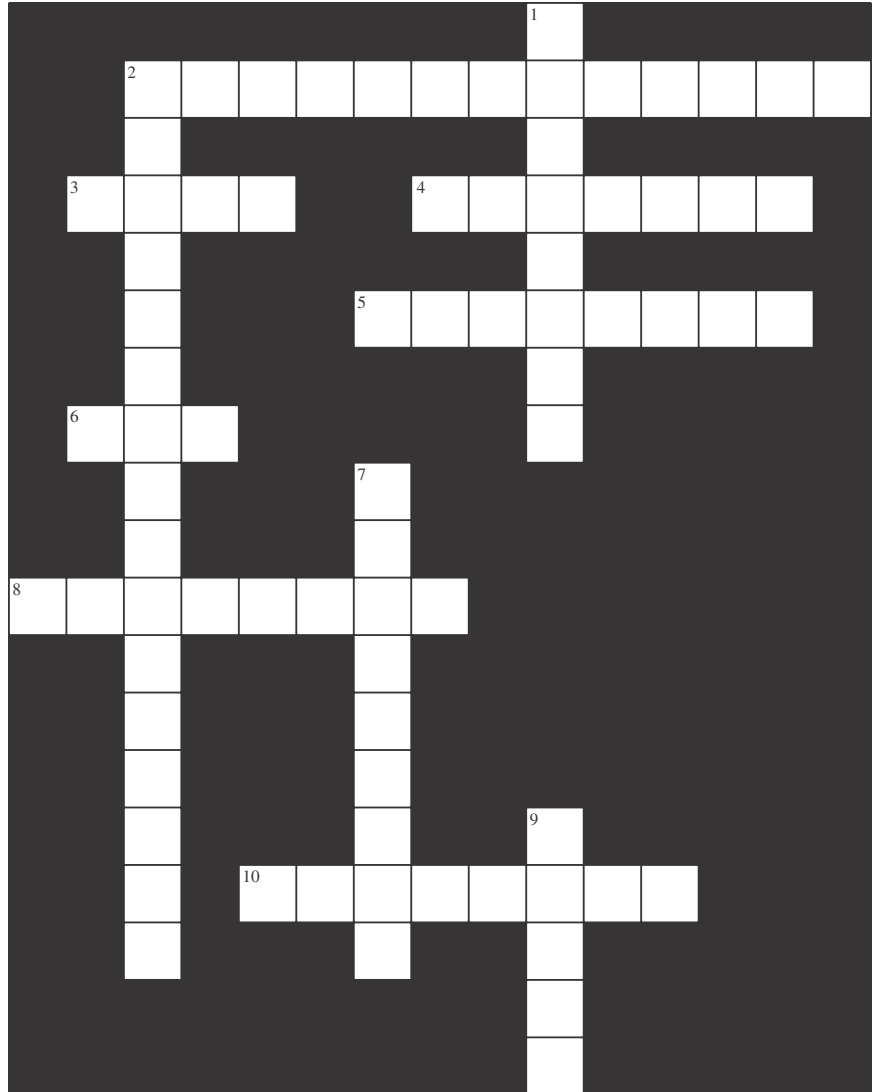
Sea ice = One of the most dangerous kinds of ice; salt water takes longer to freeze than fresh water and because of water movement is potentially dangerous

Unstable ice = Unsafe ice

Ice Terms Crossword

Across

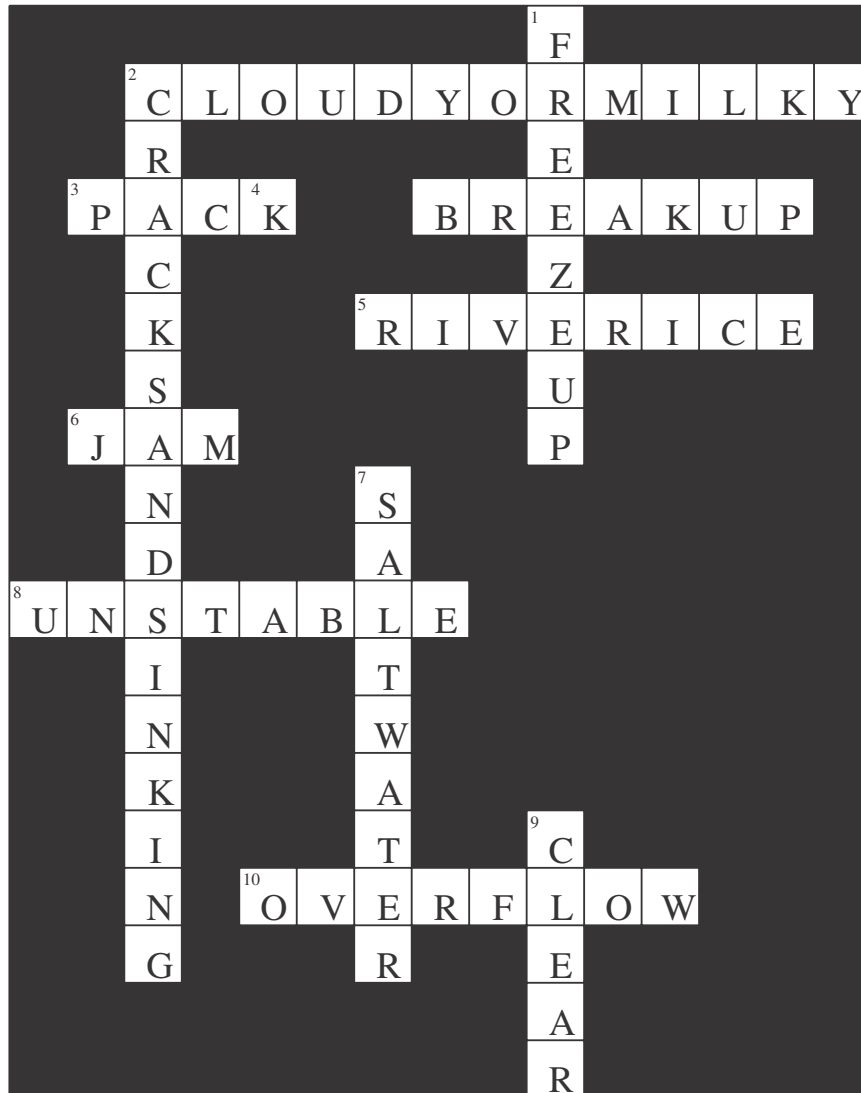
2. _____ ice is the color of ice made from snow that has been saturated with water and refrozen; not as strong as clear ice
3. _____ ice is any area of sea ice that is not attached to the shore
4. Time when the ice breaks up, melts, and flushes out, making ice very unstable; a time to stay off all ice
5. Most dangerous in areas of fast-moving water; may form in chunks that are pushed up and jumbled together with weak ice in between
6. An ice _____ occurs when chunks of ice catch in narrow or shallow areas, causing flooding; are very unstable and dangerous
8. _____ ice is unsafe ice
10. Water that flows over ice from either cracks and sinking ice or pressure ridges; can be present on land around springs and seeps



Down

1. Time when ice begins to form; variable temperatures cause very unstable conditions; a time to stay off all ice
2. Situations that occur in ice due to falling water levels in rivers, streams, and lakes
7. _____ takes longer to freeze, and because it constantly moves it creates ice that is potentially dangerous
9. _____ ice is the strongest form of ice

Ice Terms Crossword



Ice Safety

Time: Part 1: 60 minutes, Part 2: 45 minutes, Part 3: 70 minutes

Overview

Use video footage to introduce ice safety, research local ice hazards to make a poster about them, practice ice rescue techniques in the classroom.


Objectives

After completing this activity, students should be able to:

1. List where ice starts first on lakes and rivers in the fall and thawing occurs first in the spring.
2. List five safety rules to follow when on ice.

3. Identify four hazards in one area in the community commonly used for ice activities.

Materials

- *Taken by Surprise* video (29 minutes) 
- Overheads #43 **Self-Rescue from Cracked Ice**, #44 **Self-Rescue from a Fall through Ice**, #45 **Another Way to Rescue Yourself**; and #46 **Rescuing Someone Else from the Ice**
- Elders or people knowledgeable about ice in the area
- Poster board and marking pens

Procedure

Part 1 (1 hour)

1. Explain to students that they will be watching a video on thin-ice emergencies and writing a one paragraph summary of one of the incidents and a list of lessons learned from the incident.
2. Break the class into groups of three or four. Assign each group story #1, story #2 or story #3 from the video, *Taken by Surprise*. Each story is a short, real-life interview with people associated with a falling-through-thin-ice emergency.
3. Show the video, pointing out each story to the responsible group(s).
4. Allow groups time to write their assignments. You may need to replay sections of the video.

Part 2 (45 minutes)

1. Explain to students that they will be sharing and discussing the paragraphs they wrote about the stories in the video.

2. Each group reads their paragraph and list to the class. Discussion points should include:
 - In the video no mention is made of wearing a PFD when on the ice. Introduce this idea and brainstorm which PFDs they would wear when on the ice.
 - Introduce the idea of carrying ice awls, a sheath knife, metal picks, or ski poles to assist in self-rescue.
 - Mention the special dangers of sea ice.

Part 3 (70 minutes, plus homework)

1. Explain to students that they will be investigating safe travel on ice, a local ice activity area for hazards, and this area's freezing and thawing conditions.
2. Pick a local area that is frequently used for ice activities.
3. Assign students to research the area. Students should identify:
 - Where it freezes first.

- Where it thaws first.
 - Location of weak ice areas, probable causes, and most hazardous times for each.
 - Five safety rules to follow when on the ice.
 - Other hazards.
4. Students make a poster presenting this information to the public.

Note: Elders or people knowledgeable about ice in the area will be one good source of information. Field trips to observe hazards and areas will add depth to this section.

This activity addresses Alaska Content Standards:

Language Arts A-1 Effective writing, A-2 Writing conventions, B -1 Meaning from visual and oral text, C-3 Group decision making, D-1-A Personal experience and prior knowledge, D-1-D Analyzing information

Science A-4 Observable natural events, A-5 Forces of nature, D-1, 3 Practical applications of scientific knowledge

Geography A-5 Interpreting geographical patterns, B-1 Geographic characteristics of place, B-6 Making informed decisions about

place, C-2 Natural regions, F-6 Geography across the curriculum

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed choices, B-1 Risk and consequence, B-5 Evaluating information, D-1 Responsible decisions, D-2 Safe and healthy environments, D-6 Communication for community well-being

Cultural Standards D-1 Interaction with Elders, E-2 Ecology and geography of bioregion

Saved from the Ice

Time: 60 minutes

Overview


Practice ice rescue techniques using in-class simulations, video footage, and handouts.

Objectives

After completing this activity, students should be able to:

1. Demonstrate a self-rescue from cracked ice.
2. Demonstrate a self-rescue from a fall through ice.
3. Demonstrate a rescue of someone who has fallen through the ice.

Materials

- Overheads #38 **Rescue Grip**, #43 **Self-Rescue from Cracked Ice**, #44 **Self-Rescue from a Fall through Ice**, #45 **Another Way to Rescue Yourself**, and #46 **Rescuing Someone Else from the Ice**
- One per student, Overheads #38 **Rescue Grip**, #43 **Self-Rescue from Cracked Ice**, #44 **Self-Rescue from a Fall through Ice**, #45 **Another Way to Rescue Yourself**, and #46 **Rescuing Someone Else from the Ice**
- Tape to mark floor or exercise mats
- *Taken by Surprise* video (29 minutes) 
- Items to assist in ice rescue

Procedure

Before Class

1. Cue video, *Taken by Surprise*, about 4 minutes from the beginning, just before the narrator says, “It’s not a bad idea to wear a lifejacket under your clothing.”
2. Create three areas to practice ice rescues. Use tape to mark a “hole” in the ice and a “shoreline” in two different areas of the room, or use exercise mats to represent land or solid ice, where students will wiggle around on the floor. Mark another area where “ice” is cracked. Choose items from the room that might be used for ice rescue, and place them in accessible places.

Variation

Have students select rescue items.

During Class

1. Explain to students that they will be practicing rescuing themselves and others from simulated falls through the ice.
2. Introduce ice rescue by showing the rescue segment of *Taken by Surprise* video (6 minutes at the end of the tape).
3. Reinforce the rescue techniques shown in the video with Overheads #38 through #41.
4. Distribute student copies of Overheads #38 through #41.
5. Brainstorm items that could be used to rescue someone else. Point out items in the room if students don’t mention them.
6. Divide the class into three groups, and assign a group to each rescue area of the room.
7. Using their handouts, students practice self-rescue and rescuing each other.
8. Rotate groups through all three areas.

This activity addresses Alaska Content Standards:

Language Arts A-1 Effective writing, A-3 Demonstrate speaking skills, D-1-A Personal experience and prior knowledge

Science A-5 Forces of nature, A-14 Living things and their environments, D-1, 3 Practical applications of scientific knowledge

Geography B-1 Geographic characteristics of place, B-6 Making informed decisions about

place, C-3 Regional environments, E-6 Physical hazards, F-6 Geography across the curriculum

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed choices, B-1 Risk and consequence, D-2 Safe and healthy environments

When All Else Fails, Do You Die?

Time: 30 minutes

Overview

Examine cold water near-drowning using video footage and discussion.

Objective

After completing this activity, students should be able to state that people can be resuscitated if they have been submerged in cold water for up to one hour.

Materials

- *A New Look at Cold Water Near-Drowning* video (40 minutes) [AMSEA](#)
- Overhead #47 **Drowning Victims May Be Saved**

Procedure

1. Explain to students that they will be learning that people can sometimes be successfully resuscitated when they have drowned in cold water.
2. Watch the first 12 minutes of *A New Look at Cold Water Near-Drowning*. Stop just before the mechanics segment.
3. Discuss the video using Overhead #47. Discussion points:
 - Definition of “cold” water (water less than 70 °F)
 - Identifying local cold water sites
 - Cold water near-drowning victims have been successfully resuscitated

- Factors that increase the chances of survival
- Prevention—brainstorm with students. Be sure to include watching where you go when near or in the water and on the ice, wearing a PFD if on the water, and swimming only under supervision.

Note: The treatment is in accordance with the *State of Alaska Cold Injuries and Cold Water Near-Drowning Guidelines*, revised January 1996. Compare it with your current state recommendations and adjust information as necessary.

This activity addresses Alaska Content Standards:

Language Arts B-1 Meaning from oral and visual text, D-2 Evaluating information

Science A-4 Observable natural events, A-14 Living things and their environments, C-7 Effects of scientific breakthroughs, D-1, 3 Practical applications of scientific knowledge

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed choices, B-1 Risk and consequence, D-2 Safe and healthy environments

Culmination Game

Time: 30-45 minutes

Overview

Demonstrate PFD and immersion suit donning, water rescue techniques, and knowledge of liferaft features using four activity stations.

Objectives

After completing this activity, students should be able to:

1. Correctly don a PFD.
2. Correctly don an immersion suit.
3. Demonstrate the Reach, Throw, Row, Don't Go technique to rescue someone.
4. List five features of a liferaft or boat that are beneficial in a survival situation.

Materials

- Liferaft, skiff, wading pool, or other representation of a small boat that students can get “aboard” **AMSEA**
- Liferaft inflator **AMSEA**
- Type IV PFD with 30 feet of line attached and/or other items appropriate for throwing to a person who needs rescuing from the water **AMSEA**
- Five to eight immersion suits in assorted sizes that will fit students **AMSEA**
- Five to eight PFDs in assorted types and styles, and in sizes to fit students **AMSEA**
- Prizes
- One per group, Student Handout #1 **Culmination Game Score Card**
- Paper, pencils
- Four adult helpers (you can get by with two if necessary)
- Optional—Liferaft equipment kit **AMSEA**

Procedure

Before Class

1. Set up four stations:
 - Liferaft station:** Set up a liferaft or skiff with liferaft kit or bag of survival gear.
 - PFD station:** Lay out the PFDs.
 - Rescue station:** Lay out rescue devices, mark a line beyond which rescuers can not travel and an X where the person-to-be-rescued will stand.
 - Immersion suit station:** Lay out the immersion suits grouped by size.
2. Have an adult helper ready at each station. (If only two helpers, post one at the immersion suit station, the other at the liferaft station.) Before the class begins, use Student Handout #1 to explain the game scoring process to the adult helpers. They will assign the score at their stations. Note: Up to five extra points can be earned for cooperation and working as a team.
3. Divide the class into four teams as equal in size as possible.

During Class

1. Explain to students that they will be playing a game where they don PFDs and demonstrate water rescue techniques and their understanding of survival items.
2. Explain the stations and scoring method.
3. Start a team at each station. If a team finishes their station before the next station is free they must wait (working for that extra five points).
4. Teams rotate until all stations have been completed. The winner is the team with the highest adjusted score.

This activity addresses Alaska Content Standards:

Language Arts A-1 Effective writing, A-3 Demonstrate speaking skills, D-1-A Personal experience and prior knowledge, D-4 Explain and defend a position

Mathematics A-3 Arithmetic and computation

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed choices, B-1 Risk and consequence, B-2 Effective communication, D-2 Safe and healthy environments

Name: _____ Date: _____

Culmination Game Score Card

1. Fill in the number of students in your group in the blanks in the column labeled Possible Points.
2. Calculate your possible total points, being sure to add the five bonus points for cooperation.
3. Complete the activity at the station and record the score in the Actual Points column according to the criteria below.
4. When all groups are finished, rotate to the next station.
5. Continue until you have completed all stations.
6. Total your actual score. The team closest to its possible points wins.

Scoring Criteria

PFD station: Everyone must put on a PFD correctly. The PFD must fit and all closures used correctly. Two points are awarded for each person who puts on a PFD correctly.

Liferaft/Boat station: Work together to find at least four things in or on the liferaft or boat that will help you survive. Write these down on paper and show the completed list to an adult helper for scoring. One point is granted for each item listed.

Rescue station: Everyone in the group gets two chances to rescue a team member by throwing a rescue device correctly. The person-to-be-rescued stands on the X and cannot move from the X but can reach. One point is granted for every person who successfully rescues a team member.

Immersion suit station: Each student in the group must don an immersion suit correctly and carefully. Three points are awarded for each student who gets into the suit correctly.

Bonus points: Up to five extra points may be earned for cooperation and working as a team.

Station	Possible Points _____ = # people in group	Actual Points
PFD	$2 \times \text{_____} = \text{_____}$	$2 \times \# \text{ students correctly donning PFD} = \text{_____}$
Liferaft/Boat	$1 \times \text{_____} = \text{_____}$	$1 \times \# \text{ items help survive} = \text{_____}$
Rescue	$1 \times \text{_____} = \text{_____}$	$1 \times \# \text{ proper rescuers} = \text{_____}$
Immersion Suit	$3 \times \text{_____} = \text{_____}$	$3 \times \# \text{ students correctly donning suit} = \text{_____}$
Bonus Points	5	Up to 5 points for cooperation and team work = _____
Total		

Pool Activity

Time: At least 90 minutes at the pool, including locker time

Overview

Practice cold water survival skills in the pool.

Note: This activity draws together many skills learned in this volume and provides the practice that can save lives. Although there are seven stations presented here, only three to four are usually presented in any one pool session. Suggested time for each station is 15 to 20 minutes. Each station's objectives, materials list, hazards, and procedures are detailed on the templates.

Recommendations

- At a minimum, be sure you cover the PFD station.
- For a first pool session with three stations, use the PFD, immersion suit, and liferaft stations. If a liferaft is not available, substitute the overturned boat station.
- For a first pool session with four stations, use the PFD, immersion suit, liferaft, and rescue stations. If a liferaft is not available, substitute the overturned boat station.
- If you are doing a pool exercise more than once with the same group of students, use the extensions and additional stations to provide growth and more advanced skills practice.
- Have students come dressed for the pool to save time.

Materials Needed for Every Pool Session

Student

- Clean pool clothing (shirt and pants), if allowed to go into pool with clothes, and dry clothes to change into
- Towel
- Signed permission slip or waiver
- Swimsuit for Floating in Clothes Station
- Personal PFD—if student wants to try own PFD in addition to others

Instructor

- Clean pool clothing (shirt and pants), if allowed to go into pool with clothes, and dry clothes to change into
- Towel

Each Station

- **General Safety Protocols** (make from Template #1), laminated back-to-back with **station procedure**
- **Station procedure** (choose from Templates #3, #5, #7, #9, #11, #13, and #15), laminated back-to-back with **General Safety Protocols**
- One lead instructor and at least one adult helper, good swimmers and able to perform skills at the station
- Whistle
- Watch
- Additional materials listed for station (see Templates #2, #4, #6, #8, #10, #12, and #14)
- Optional—One parent or adult group supervisor who moves from station to station with the group

Procedure

Logistics Before the Pool Session

1. Reserve pool and lifeguard.
 - Allow at least 65 minutes for three stations (88 minutes for four stations) plus locker room time (about 10 minutes each side of the activity).
 - Ask if clean clothing is permitted in the pool.
 - Determine fees for pool and lifeguard.
2. Arrange for transportation to the pool.
3. Arrange for materials needed for activity, and provide any necessary training for assistants.
4. Send out permission slips or waivers, being sure to ask about health risks and nonswimmers. Also send out a list of what students need to bring for the activity.

In Class

1. Review and practice proper donning techniques for PFDs and immersion suits—use PFDs Unit Activities #3 **The PFD Game** and #5 **Don That Immersion Suit**; Cold Water Survival Unit Activity #8 **Cold Water Survival on Dry Land** or #14 **Culmination Game**.
2. Review and practice HELP, Huddle, chain swim, and elbow lock in class—use Cold Water Survival Unit Activity #8 **Cold Water Survival on Dry Land**.
3. Review and practice reach-to-rescue skills—Cold Water Survival Unit Activity #9 **Reach, Throw, Row, Don't Go**.
4. Explain the pool and safety rules to the students (see Template #1 **General Safety Protocols**).
5. Have students take home a permission slip or waiver and a list of items they must bring for the pool activity.
6. Divide the students into the same number of groups as you have stations, being sure each group has a mix of physical sizes. Within each group, have students buddy up in pairs or trios and explain that buddies are to help and watch out for each other.
7. Remind students to leave valuables at home on day of pool exercise.

Preactivity at the Pool

1. Arrange the equipment and hang appropriate posters at each station.
2. Distribute and review general safety protocols and station procedures with instructors when you give them their laminated station cards. Identify nonswimmers and students with health risks. Remind instructors that it is difficult to talk at the pool due to high noise levels. Discussions need to be done in close proximity or after the pool session.
3. Designate one person as timekeeper to keep the station rotation smooth. Tell instructors they will have a two-minute warning to allow them to bring their activities to a close. A whistle works well for this.
4. Brief the lifeguard on the activity and general safety protocols and identify nonswimmers and students with health risks.

During the Pool Activity

1. Assemble students to review the pool and general safety protocols and to remind them that this is a “cold” water survival session.
2. Divide students into their preassigned groups. Assign adult helpers to escort each group to its initial station. If available, have adult helpers rotate with each group.
3. Use station procedure cards for each station.
4. If time allows, the last group at each station helps rinse the gear from their station in fresh water.

Post Pool Activity

1. Account for all gear.
2. Turn rinsed immersion suits, flotation coveralls, float coats, and jackets inside out and hang to dry out of direct sunlight.
3. Turn gear within a day or two to dry right side out.
4. Lubricate immersion suit zippers with nonparaffin wax before storing or returning the equipment.
5. Complete Activity #17 **Post Pool/Cold Water Activity**.
6. If using AMSEA gear, return to AMSEA.

This activity addresses Alaska Content Standards:

Science D-1, 3 Practical applications of scientific knowledge

prevention, A-6 Making informed decisions, B-1 Risk and consequences, D-1 Responsible decisions, D-2 Safe and healthy environments

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury

General Safety Protocols at the Pool

- A lifeguard—who should not be involved in teaching any part of the class—must be briefed on all stations and potential hazards and be on duty at all times during the activity.
- Identify nonswimmers in advance. Encourage them to participate fully, without forcing them to go beyond personally established comfort levels.
- Recommended instructor to student ratio is 1:8 or less, 1:1 for nonswimmers.
- Each instructor needs to know how to contact emergency response personnel quickly and effectively.
- Ensure that all instructors and helpers are familiar with nonswimming rescue techniques: Reach, Throw, Row, Don't Go.
- All pool rules must be followed, especially no running or rough play.
- Students should not enter the pool until directed to do so by the instructor.
- No jumping into the pool unless it is part of a lesson.
- No diving.
- All students and instructors must wear a PFD or immersion suit at all times when in the water. This is simulated cold water survival skills practice. Model what you teach.
- Identify health risks among students and instructors in advance (heart conditions, injuries, medication, recent surgery, physical challenges, etc.).
- Encourage but do not force students to participate.
- Do not allow students to use pool equipment specifically intended for safety or actual rescue at the pool.
- If the whistle blows, all must stop and look at the instructor.
- If someone is in danger, call for help immediately.
- Students must have a buddy with them when in the water.

General Hazards

- Students may become overheated in immersion suits.
- Student may become hypothermic when wet.
- It may be difficult to hear directions because of the noise level and immersion suit hoods. A whistle helps.



PFD Station at the Pool—Objectives, Materials

Objectives

After completing this activity, students should be able to:

1. Demonstrate safe entry into “cold” water.
2. Demonstrate the HELP and Huddle positions for at least one minute in the water while wearing a PFD.
3. Compare at least two different kinds of PFDs for comfort, buoyancy, warmth, fit, personal use, and appropriate activities.

Additional Materials

- Enough for one per student in a group, assortment of Type I, II, III, V, and nonapproved PFDs 
- One per instructor or helper in the water, PFD 
- Laminated posters of Overheads #16 **When Easing into the Water Is Not an Option with a PFD**, #17 **HELP—Heat Escape Lessening Position**, and #18 **Huddle Position**

PFD Station at the Pool—Procedure

Procedure

1. Make sure nonswimmers are known, and work with them one on one.
2. Explain to students that they will be trying on different PFDs, and doing the HELP and Huddle positions in the water.
3. Have students pick out and correctly don a PFD, then stand with their buddy and wait to enter the pool until directed to do so.
4. When PFDs are properly donned, have students enter the “cold” water slowly without getting their heads wet. Once students are used to the water, have them hold the HELP position for one minute.
5. After one minute, have students release from the HELP position and note any temperature difference.
6. Have those students who feel comfortable see if their PFD will turn them face up if they pretend to be unconscious, face down in the water.
7. Have students get out of the water and divide into two groups: my PFD turned me face up, or my PFD did not turn me face up.
8. Using a different PFD, and the Huddle instead of the HELP, repeat steps 3-7.

9. Repeat the Huddle routine with different PFDs as time allows.

10. Debrief the station:

- Compare PFDs by: buoyancy, ability to turn students face up automatically, fit, comfort, warmth, would student want to wear it, for what activities, and favorite PFD.
- Which of the Seven Steps to Survival they used in the Huddle position.
- What kind of temperature changes they noticed when they came out of the HELP and Huddle positions.

Extensions

1. Have students line up at the side of the pool at the deep end and jump into the water correctly one at a time. Refer to laminated poster of Overhead #16 **When Easing into the Water Is Not an Option with a PFD.**
2. Two at a time, have students practice donning a PFD in the water.

Hazards

- Students may injure their spines if jumping.
- Students may drown when donning a PFD in the water.

Immersion Suit Station at the Pool—Objectives, Materials

Objectives

After completing this activity, students should be able to:

1. Properly don an immersion suit.
2. Enter the water in an immersion suit, keeping their faces dry.
3. Float on their backs in an immersion suit.
4. Demonstrate the elbow lock in an immersion suit in the pool.
5. Demonstrate the chain swim in an immersion suit in the pool.

Additional Materials

- Enough immersion suits to fit one quarter of the class with size assortment appropriate for the group **AMSEA**
- Immersion suit zipper wax **AMSEA**
- One per instructor or helper in the water, PFD or immersion suit **AMSEA**
- Two per immersion suit, plastic grocery bags to help feet slip in easier
- Laminated posters of Overheads #17 **HELP—Heat Escape Lessening Position**, #19 **Donning an Immersion Suit**, #20 **When Easing into the Water Is Not an Option with an Immersion Suit**, #22 **Chain Swim**, and #23 **Elbow Lock**

Immersion Suit Station at the Pool—Procedure

Procedure

1. Make sure nonswimmers are known, and work with them one on one.
2. Explain to students that they will be putting on immersion suits and doing the elbow lock and chain swim in the water.
3. Explain additional hazards:
 - When removing suits students can fall, injuring themselves or others.
 - Water-filled suits are very heavy and awkward on pool deck.
 - Students may injure their spines when jumping into the water wearing immersion suits.
 - They need to watch out for other students and the sides of the pool when doing the chain swim.
4. Working with their buddy, have students don immersion suits that fit, then wait to enter the pool until directed to do so.
5. When immersion suits are properly donned, direct students to enter the water slowly, keeping their faces dry.
6. Direct students to inflate air bladders/pillows. Once students are comfortable, have them float on their backs and practice the elbow lock.
7. Have them practice the chain swim.
8. Have students exit the water, take off their suits, deflate the suits' air bladders, and wax zippers.

9. Debrief the station, discussing how well students floated, what they liked about the suits, and any problems they had.

Extensions

1. With deflated air bladders/pillows, have students jump into the water one at a time under your supervision. Refer to laminated poster of Overhead #20 **When Easing Into the Water is Not an Option with an Immersion Suit.**
2. Have students exit the water and remove suits.
3. Challenge students to try to don their suits in less than one minute as you time them.
4. Have students who feel comfortable take off their suits and practice donning them in the water, thinking about how much more difficult this would be in cold water. Instructors must provide close supervision here. People who are not strong swimmers should do this in shallow water.

Hazards

- Students may injure their spines if jumping into water with immersion suit on.
- Students may drown when donning an immersion suit in the water.

Liferaft Station at the Pool—Objectives, Materials

Objectives

After completing this activity, students should be able to:

1. Demonstrate safe entry into and exit from a liferaft in the pool while wearing a PFD or immersion suit.
2. Identify three features of a liferaft that are beneficial in an emergency.

Additional Materials

- Liferaft and inflator **AMSEA**
- One per student in a group, PFD or immersion suit—size assortment to fit all in class **AMSEA**
- One per instructor or helper in the water, PFD **AMSEA**
- Immersion suit zipper wax **AMSEA**
- Laminated poster of Overhead #36 **How to Right a Liferaft**

Extension

- Instructor or assistant who is very comfortable in the water to be a spotter/rescuer in an immersion suit or PFD

Liferaft Station at the Pool—Procedure

Procedure

1. With liferaft in the deep end of the pool, tie the painter off to something stationary.
2. Make sure nonswimmers are known, and work with them one on one.
3. Explain to students that they will be getting into and out of the liferaft while in a PFD/immersion suit.
4. Explain additional hazards:
 - They may feel claustrophobic or panic inside the raft.
 - Inside the raft, they may step or fall on each other.
 - They may land face down when entering the liferaft.
5. Have students don a PFD or immersion suit that fits, then stand with their buddy and wait to enter the pool until directed to do so.
6. Direct students to enter the water slowly, keeping their heads dry, and wait their turn to enter the liferaft.
7. Have students enter the raft one at a time and, once in, help others enter.
8. After everyone is inside, have them look around and:
 - Identify three features of a liferaft that are beneficial in an emergency.
 - Apply the Seven Steps to Survival to their “situation.”
 - Figure out how they would get drinking water if they were living in the liferaft.
9. After the discussion is done, have students exit the raft one at a time in a controlled manner.
10. Have students exit the pool.
11. Debrief the activity, discussing how hard it was to enter the raft, problems they encountered, and a summary of their discussion in the raft.

Extension

One at a time, have students right the raft in the water. Instructor or assistant needs to provide close supervision and be in the water as a spotter/rescuer in case anyone gets trapped under the liferaft or needs help.

- No student is allowed under the raft, except when righting it.
- No wrapping the righting strap around arms or hands.
- If caught under raft when righting it, students are to push against the bottom and “walk” out.

Hazard

- Students may get caught under the raft when righting it.

Rescue Station at the Pool—Objectives, Materials

Objectives

After completing this activity, students should be able to:

1. Demonstrate the proper technique for throwing a rescue device.
2. Demonstrate the correct way to reach to a victim in the water.
3. Demonstrate the proper technique for rolling a victim out of the water when you have one rescuer.
4. Demonstrate the proper technique for rolling a victim out of the water when you have two rescuers.

Additional Materials

- Assortment of rescue devices—long pole or boat oar, Type IV PFD, rope throw bags, gallon containers, jerry jugs, or other homemade devices (throwable types should each have 30 feet of line attached) **AMSEA**
- One per student in a group, PFD—in appropriate sizes **AMSEA**
- One per instructor or helper in the water, PFD **AMSEA**
- Laminated posters of Overheads #37 **Reach**, #38 **Rescue Grip**, #39 **Throw**, #41 **Single Person Rescue—Bounce**, and #42 **Two Person Rescue—Roll**
- Optional—Dinghy or inflatable boat **AMSEA**
- Inflator (if inflatable boat used) **AMSEA**

Rescue Station at the Pool—Procedure

Procedure

1. Explain to students that they will be practicing rescuing people from the water.
2. Make sure nonswimmers are known, and work with them one on one.
3. Explain additional hazards to students:
 - “Victims” may be injured by inaccurate throws of rescue devices.
 - Rescuers or the person being rescued may injure their backs.
 - Rescuers may fall in the water.
4. Remind students that they must not throw the rescue device if the victim isn’t looking and that the rescue device should be thrown beyond, not at, the victim. Also, they should not allow the victim to grab them.
5. Remind students that as victims, they will enter the water slowly, keeping their heads dry, and watch the rescuers. If they can’t reach the thrown rescue device, the rescuer must try again. Once they have grabbed the device, they should allow themselves to be towed to the boat/deck.
6. Remind students that both rescuers and victims should stop their activity if it hurts their backs.
7. Select two volunteers to be the first victims. The rest will be rescuers. Have victims don their PFDs and enter the water.
8. Direct the students, one at a time, to throw the rescue device beyond the victim and pull it so it is within arm’s length of the victim.
 - If the rescue device is not within reach, students should pull it in and throw again until successful.
 - Once the victim is securely holding the rescue device, have students pull him/her to the dock or inflatable buoyant apparatus, which the victim will hold.
9. Rescuers then extend an object to nearby victim and tow the person to the boat/deck. Using the proper technique, they recover the person into the boat or onto the deck by themselves. Then, working with another rescuer, they recover the person using a two-person technique.
10. Monitor rotation throughout the exercise.
11. Debrief the activity, discussing rescue successes and problems.

Overtured Boat Station at the Pool—Objectives, Materials

Objectives

After completing this activity, students should be able to:

1. Demonstrate the Stay With the Boat rule in the pool while wearing a PFD.
2. Demonstrate climbing on top of an overturned boat or into a swamped boat while wearing a PFD.

Additional Materials

- One per student, PFD or immersion suit **AMSEA**
- One per instructor or helper in the water, PFD or immersion suit **AMSEA**
- Swamped inflatable dinghy or plastic boat with strong lines for tying off **AMSEA**
- Inflator **AMSEA**
- Laminated poster of Overhead #28 **Stay with the Boat**

Overtaken Boat Station at the Pool—Procedure

Procedure

1. Have the boat swamped in the deep end of the pool with its painter tied off to something stationary.
2. Make sure nonswimmers are known, and work with them one on one.
3. Explain to students that they will be climbing into a swamped boat or on top of a capsized boat. (Instructor chooses which one or both.) Students are not to get under the boat.
4. Explain additional hazards:
 - Students may step or fall on one another in the boat.
 - Students may get caught under the boat if it capsizes.
5. Have students don a PFD or immersion suit, then stand with their buddy and wait to enter the pool until directed to do so.
6. When PFDs are correctly donned, have students enter the water slowly, keeping their heads dry, and wait their turn to enter the swamped boat. An instructor should be in the water standing by to monitor and assist the students and stabilize the boat, watching for entrapment and being ready to assist.
7. Have students enter the boat one at a time, being careful not to capsize it.

After everyone is in, have students discuss the boat's stability even when full of water and people, and review the Stay Rules, noting which one they are doing to help prevent hypothermia.
8. Direct students to exit the boat one at a time in a controlled manner.
9. Have students swim to the side of the pool, then instructor in the water tips the boat upside down (capsizes it).
10. Direct students to take turns climbing on top of overturned boat.
11. Have students exit the pool.
12. Debrief the activity, including how it is possible to use a swamped or capsized boat to get more of yourself out of the water, a review of the Stay Rules, and any problems or concerns.



Floating in Clothes Station at the Pool—Objectives, Materials

Objectives

After completing this activity, students should be able to:

1. Demonstrate proper techniques for floating when wearing heavy clothes.
2. Demonstrate proper techniques for swimming short distances when wearing heavy clothes.
3. State that staying still in the water is the best way to slow down hypothermia.
4. State that swimming while wearing clothes and a PFD keeps them warmer than swimming while wearing only a swimsuit and PFD.

Additional Materials

- One per student in a group, inflatable PFD 
- One per instructor or helper in the water, PFD 
- Laminated poster of Overhead #17 **HELP—Heat Escape Lessening Position**
- One set per student, clean dry clothes including a sweater, rain gear, and boots or hip waders

Note: Students need to wear their swimsuits under clothes

Floating in Clothes Station at the Pool—Procedure

Procedure



1. Explain to students that they will be practicing floating and swimming with clothing and uninflated PFDs, and that only people comfortable swimming will practice these techniques.
2. Explain additional hazard:
 - Students may drown when practicing floating and swimming while wearing clothes only.
3. Have students put clothes over swimsuits and don inflatable PFDs, reminding them that they can inflate their PFD if they are uncomfortable at any time during the exercise. Have students wait on deck with their buddy until directed to enter the water.
4. Once PFDs are correctly donned, direct students to fall into the water one at a time. Then they assume the HELP, and stay as still as possible for as long as possible.
5. After they can no longer float, have them swim on their backs to the side of the pool using their forearms for locomotion, keeping upper arms close to their sides.
6. Have students inflate their PFD and swim to the opposite side of the pool.
7. Direct students to exit the pool, remove their extra clothing, don their PFD again, and swim back across the pool.
8. Have students exit the pool, then debrief the activity, discussing:
 - How long clothing helped them stay afloat.
 - Difficulty of swimming with clothes on with and without an inflated PFD.
 - Warmth of swimming with clothes versus a swimsuit.
 - Their conclusions from the exercise.

Ice Self-Rescue Station at the Pool—Objectives, Materials

Objective

After completing this activity, students should be able to demonstrate proper techniques for self-rescue from a hole in the “ice” while wearing a PFD in the pool.

Additional Materials

- Assortment of PFDs 
- One per instructor or helper in the water, PFD 
- Two floating mats (the ice)
- Laminated posters of Overheads #17 **HELP—Heat Escape Lessening Position**, #44 **Self-Rescue from a Fall through Ice**, and #45 **Another Way to Rescue Yourself**

Ice Self-Rescue Station at the Pool—Procedure

Procedure

1. Explain to students that they will be practicing self-rescue from a hole in the ice.
2. Make sure nonswimmers are known, and work with them one on one.
3. Remind students of the hazard of getting caught under the floating mats.
4. Have students don a PFD that fits and wait with their buddy until directed to enter the water.
5. When directed to do so, two students at a time enter the water slowly, then practice rescuing themselves from the ice, remembering to crawl away from the hole toward safer ice.
6. Be sure all have a chance to do this.
7. Have students exit the pool and debrief the activity, including self-rescue challenges.

Cold Water Activity

Time: 60 minutes minimum at cold water site

Overview

Practice cold water survival skills in a cold water setting.

Note: This activity draws together many skills learned in this volume and provides the practice that can save lives in a realistic but safe environment. Although there are six stations presented here, only three to four are usually presented in any session. Suggested time for each station is 20 to 40 minutes. Each station is treated separately and the page(s) detailing it includes objective(s), materials list, hazards, and procedures.

Recommendations

- The number of stations for this activity depends on the site and the number of people available to instruct and assist.
- If you have to select a limited number of stations, be sure to include the immersion suit and warm up stations.
- Waiting students can watch others in the water if conditions do not allow for more than one station.
- If you are doing a cold water exercise more than once with the same group of students, the extensions provide more advanced skill practice.
- Cold water skills stations can be combined with land survival skills stations found in the *Land Safety and Survival* volume.

Materials

- One or two trained people standing by in a “rescue” skiff with a rescue device
- Person assigned first aid duties
- Optional—one per group, parent or adult supervisor to move with the group from station to station

Students

- Outdoor clothing and hat
- Towel and change of clothing
- Signed permission slip or waiver
- Optional—personal immersion suit if want to use own suit

Instructors

- Outdoor clothing and hat
- Towel and change of clothing

Each Station

- Additional materials (see Templates #2, #4, #6, #8, #10, and #11)
- **General Safety Protocols** (make from Template #1), laminated back-to-back with **Station procedure card**
- **Station procedure card** (make from Templates #3, #5, #7, #9, #10, and #11), laminated back-to-back with **General Safety Protocols**
- Lead instructor
- One (at least) adult helper
- First aid kit
- Extra towels, blankets, and hats
- Whistle
- Watch

Procedure

Logistics Before the Cold Water Session

1. Identify a suitable location. Consider:
 - Access to emergency medical services system.
 - Docks are usually easier on the equipment than beach locations, but watch out for tar!
 - Depth and nature of the bottom.
 - Cleanliness of water—free of oil and sewage discharge.
 - Easy entrance into and exit from the water, especially vertical distance from the water to a dock surface.
 - Strength and direction of the current.
 - Tide (if applicable).
 - A self-contained area or one that can be roped off.
 - Permission from appropriate authority.
2. Arrange for materials needed for activity and provide any necessary training for assistants.
3. Arrange for transportation to the site.
4. Inform the EMS system about the event and ask for their participation.
5. Send out permission slips or waivers, being sure to ask about health risks and nonswimmers. Also send out a list of what students need to bring for the activity.

In Class

1. Review and practice proper techniques for donning immersion suits, elbow lock, and chain swim—use Cold Water Survival Unit Activity #8 **Cold Water Survival on Dry Land**.
2. Review and practice rescue skills—use Activity #9 **Reach, Throw, Row, Don't Go!**
3. Review and practice liferaft skills—use Activity #7 **Abandon Ship!**
4. Divide students into as many groups as there are stations, being sure each group has a mix of physical sizes. Within each group, have students buddy up in pairs or

trios, and explain that buddies are to help and watch out for each other.

5. Explain the rules for the activity.
6. Remind students to leave valuables at home on day of pool exercise.
7. Have students take home a permission slip or waiver and a list of items they must bring to the activity.
8. Have a backup plan ready in case of poor weather.

Preactivity at the Site

1. Arrange the equipment and appropriate posters at each station.
2. Review the procedure, hazards, and safety protocols with instructors when you give them their laminated station cards. Identify nonswimmers and students with health risks.
3. Designate one person as timekeeper to keep the rotation between the stations smooth. Give instructors at each station a five-minute warning—a whistle works well for this—to allow them to bring their activities to a close. It takes about five minutes for a group to exit the water and remove immersion suits.

During the Cold Water Activity

1. When students arrive, review **General Safety Protocols in Cold Water**.
2. Divide students into their preassigned groups. Assign adult helpers to escort each group to its first station. If possible, have adult helpers rotate with each group.
3. Instructors at cold water stations get into water before students.
4. Refer to instruction cards for detailed procedures for each station.
5. If time allows, the last group at each station should help rinse gear inside and out with fresh water.

Post Cold Water Activity

1. Account for all gear.
2. Turn rinsed immersion suits inside out and hang to dry out of direct sunlight.

3. Turn immersion suits within a day or two to dry right side out.
4. Lubricate immersion suit zippers with nonparaffin wax before storing or returning the equipment.
5. If using AMSEA gear, return to AMSEA.
6. Complete Activity #17 **Post Pool/Cold Water Activity**.

For all stations except the Emergency Medical Services station, this activity addresses Alaska Content Standards:

Science D-1, 3 Practical applications of scientific knowledge

Geography B-1 Geographic characteristics of place, B-6 Making informed decisions about place, C-3 Regional environments, E-6 Physical hazards

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury prevention, A-6 Making informed decisions, B-1 Risk and consequences, D-1 Responsible decisions, D-2 Safe and healthy environments

For the Emergency Medical Services station, this activity addresses Alaska Content Standards:

Science D-1, 3 Practical applications of scientific knowledge

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury

prevention, A-6 Making informed decisions, B-1 Risk and consequences, D-1 Responsible decisions, D-2 Safe and healthy environments

General Safety Protocols in Cold Water

- Identify nonswimmers in advance. Encourage them to participate fully without forcing them to go beyond personally established comfort levels.
- Recommended instructor-student ratio is 1:5, 1:1 for nonswimmers.
- At least one instructor should remain out of the water and at least one instructor should be in the water with the students at each cold water station.
- A rescue boat with rescue devices must be actively standing by.
- The activity location must be free of boat traffic and reasonably sheltered from wind, waves, tide, current, pollution, and potentially aggressive marine mammals.
- The location must be accessible by rescue personnel in the event of an emergency.
- Every adult must know how to contact emergency response personnel quickly.
- Immediate first aid response capability must be provided, especially early recognition and treatment of hypothermia. Having emergency medical services (EMS) personnel at a station addresses this concern.
- No running or rough play—docks and shores have too many hazards.
- No jumping into the water except under direct supervision of an instructor.
- No diving.
- All participants and instructors must wear a PFD at all times when on the dock or near the water.
- No student or instructor is allowed in the cold water without an immersion suit, dry suit, or PFD with appropriate thermal protection for the conditions.
- Anyone in the water must exit as soon as he/she feels cold.
- Identify health risks among students and instructors in advance (heart conditions, injuries, medications, recent surgeries, physical challenges, etc.).
- Ensure that all instructors and helpers are familiar with nonswimming rescue techniques: Reach, Throw, Row, Don't Go.
- Identify additional safety hazards to everyone, such as protruding nails, slippery areas, and broken glass.
- Do not allow students to use equipment that is intended for safety or actual rescue.
- If whistle blows, all must stop and look at the instructor.
- If someone is in danger, call for help immediately.
- Students must have a buddy with them when in the water.

Hazards

- Students may feel claustrophobic or panic while wearing immersion suits.
- Students may become overheated in immersion suits or hypothermic if wet.
- Students who are hypothermic are more likely to have accidents.
- Students cannot hear well with immersion suit hoods on. A whistle helps.
- When donning, wearing, or removing suits students can fall, injuring themselves or others.
- Students who swim on their stomachs will get water in their immersion suits.
- Students may be injured by protruding nails or other sharp objects.

Immersion Suit Station in Cold Water—Objectives, Materials

Objectives

After completing this activity, students should be able to:

1. Properly don an immersion suit.
2. Enter the water in an immersion suit while keeping their faces dry.
3. Float on their backs in immersion suits.
4. Demonstrate an elbow lock in immersion suits in cold water.
5. Demonstrate a chain swim in immersion suits in cold water.

Additional Materials

- Two additional assistants willing to help in the water
- Laminated posters of Overheads #17 **HELP—Heat Escape Lessening Position**, #19 **Donning an Immersion Suit**, #20 **When Easing into the Water Is Not an Option with an Immersion Suit**, #22 **Chain Swim**, and #23 **Elbow Lock**
- One per student in a group, immersion suit—size assortment to fit all in class **AMSEA**
- One per instructor, immersion suit or dry suit **AMSEA**
- One per assistant, immersion suit or dry suit **AMSEA**
- Two per immersion suit, plastic grocery bags to cover shoes (if shoes are worn in suits)
- Immersion suit zipper wax **AMSEA**
- Tarp—optional for sitting on when donning and getting out of suits

If on a Dock

- An inflatable platform or inflatable buoyant apparatus and inflator to provide a stepping platform closer to the water **AMSEA**
- PFDs for adult helpers to wear on the dock **AMSEA**

Immersion Suit Station in Cold Water—Procedure

Procedure

1. Make sure nonswimmers are known, and work with them one on one.
2. Explain to students that they will be donning immersion suits and doing the elbow lock and chain swim in the water.
3. Define the area for swimming.
4. Working with their buddy, have students don immersion suits that fit, then wait to enter the water until directed to do so. If the area is sandy or muddy, suits should be donned and removed while sitting on a tarp.
5. When immersion suits are properly donned, direct students to enter the water slowly, keeping their faces dry. If you are on a dock, the first time the students get into the water it should be a gentle entry, not a jump.
6. Direct students to inflate air bladders/pillows. Once students are comfortable, have them float on their backs and practice the elbow lock.
7. Have them practice the chain swim.
8. Have students exit the water, take off their suits, deflate the suits' air bladders, and wax zippers.
9. Debrief the activity, discussing how well students floated, what they liked about the suits, how warm they were, and any problems they had.

Extension

After navigating in suits, have students exit from the water and, using proper technique, jump one by one from the side of the dock into the water. You may need to demonstrate this first. Refer to laminated poster of Overhead #20 **When Easing into the Water Is Not an Option with an Immersion Suit.**

Hazard

- Students may injure their spines if jumping into water with immersion suits on.

Liferaft Station in Cold Water—Objectives, Materials

Objectives

After completing this activity, students should be able to:

1. Demonstrate how to enter and exit a liferaft in cold water while wearing an immersion suit.
2. Apply the Seven steps to Survival to life in a liferaft.

Additional Materials

- One or two adult helpers to assist students on dock/shore
- Two assistants (minimum) willing to help in the water
- One per student in a group, immersion suit—size assortment to fit all in class **AMSEA**
- One per instructor, immersion suit or dry suit **AMSEA**
- One per assistant, immersion suit or dry suit **AMSEA**
- Two per immersion suit, plastic grocery bags to cover shoes (if shoes are worn in suits)
- Immersion suit zipper wax **AMSEA**
- Liferaft and inflator **AMSEA**
- Laminated poster of Overhead #36 **How to Right a Liferaft**
- Tarp—optional for students to sit on when donning and getting out of suits

If on a Dock

- An inflatable platform or inflatable buoyant apparatus and inflator to provide a stepping platform closer to the water **AMSEA**
- PFDs for students and adult helpers to wear on the dock **AMSEA**

Liferaft Station in Cold Water—Procedure

Procedure

1. Make sure the liferaft is tied off to something stationary.
2. Make sure nonswimmers are known, and work with them one on one.
3. Explain to students that they will be getting in and out of a liferaft while in the water with immersion suits.
4. Explain additional hazards:
 - They may feel claustrophobic or panic inside the raft.
 - Inside the raft, they may step or fall on each other.
 - They may land face down when entering the liferaft.
5. Have students don an immersion suit that fits, then stand with their buddy and wait to enter the water until directed to do so. If the area is sandy or muddy, immersion suits should be donned and removed while sitting on a tarp.
6. Direct students to enter the water slowly, keeping their heads dry.
7. Have students chain swim to the raft. The instructor in the water should accompany them to the raft.
8. Have students enter the raft one at a time and, once in, help others enter.
9. After everyone is inside, direct students to look around and:
 - Apply the Seven Steps to Survival to their “situation.”
 - Figure out how they would get drinking water if they were living in the liferaft.
10. After the discussion is done, have students exit the liferaft one at a time in a controlled manner.
11. Have students exit the water.
12. Debrief the activity, discussing how hard it was to enter the raft, problems they encountered, and a summary of their discussion in the raft.

Extension

One at a time, have students right the raft in the water. Instructor or assistant needs to provide close supervision and be in the water as a spotter/rescuer in case anyone gets trapped under the liferaft or needs help.

- No student is allowed under the raft, except when righting it.
- No wrapping the righting strap around arms or hands.
- If caught under raft when righting it, students are to push against the bottom and “walk” out.

Hazard

- Students may get caught under the raft when righting it.

Overtaken Boat Station in Cold Water—Objectives, Materials

Objectives

After completing this activity, students should be able to:

1. Demonstrate how to climb on top of an overturned boat in cold water while wearing immersion suits.
2. Demonstrate the Stay With the Boat rule while in cold water wearing immersion suits.

Additional Materials

- Two assistants (minimum) willing to help in the water
- One per student in a group, immersion suits—size assortment to fit all in class **AMSEA**
- One per instructor, immersion suit or dry suit **AMSEA**
- One per assistant, immersion suit or dry suit **AMSEA**
- Two per immersion suit, plastic grocery bags to cover shoes (if shoes are worn in suits)
- Immersion suit zipper wax **AMSEA**
- Skiff or dinghy with strong lines for tying off **AMSEA**
- Tarp—optional for sitting on when donning and getting out of suits

If on a Dock

- An inflatable platform or inflatable buoyant apparatus to provide a stepping platform closer to the water **AMSEA**
- Inflator **AMSEA**
- PFDs for students and adult helpers to wear on the dock **AMSEA**

Overtaken Boat Station in Cold Water—Procedure

Procedure

1. Have the boat swamped and tied off to shore or the dock.
2. Make sure nonswimmers are known, and work with them one on one.
3. Explain to students that they will be climbing into a swamped boat or on top of a capsized boat. (Instructor chooses which one or both.) Students are not to get under the boat.
4. Explain additional hazards:
 - Students may step or fall on one another in the boat.
 - Students may get caught under the boat if it capsizes.
5. Have students don an immersion suit, then stand with their buddy and wait to enter the water until directed to do so. If the area is sandy or muddy, immersion suits should be donned and removed while sitting on a tarp.
6. When immersion suits are correctly donned, have students enter the water slowly, keeping their heads dry, and wait their turn to enter the swamped boat. An instructor should be in the water to monitor and assist the students and stabilize the boat, watching for entrapment and ready to assist.
7. Have students enter the boat one at a time, being careful not to capsize it.

After everyone is in, have them discuss the boat's stability even when full of water and people, and review the Stay Rules, noting which one they are doing to help prevent hypothermia.
8. Direct students to exit the boat one at a time in a controlled manner.
9. Have students chain swim away from the boat, then instructor tips the boat upside down (capsizes it).
10. Direct students to chain swim to the overturned boat and take turns climbing on top of it.
11. Have students exit the water.
12. Debrief the activity, including how it is possible to use a swamped or capsized boat to get more of yourself out of the water, a review of the Stay Rules, and any problems or concerns.

Rescue Station in Cold Water—Objectives, Material

Objectives

After completing this activity students should be able to:

1. Demonstrate the proper Reach, Throw, Row, Don't Go rescue technique.
2. Demonstrate one technique for rescuing someone from the water.
3. Demonstrate the proper technique for rolling a victim out of the water when you have two rescuers.

Additional Materials

- Laminated posters of Overheads #37 **Reach**, #38 **Rescue Grip**, #39 **Throw**, #41 **Single Person Rescue—Bounce**, and #42 **Two Person Rescue—Roll**
- Throwable rescue device with 30 feet of line attached **AMSE1**
- One per “victim,” immersion suit **AMSE1**
- One per student in group, immersion suit—size assortment to fit all **AMSE1**
- Immersion suit zipper wax **AMSE1**
- Tarp—optional to sit on when donning and getting out of suits
- An inflatable platform or inflatable buoyant apparatus and inflator **AMSE1**

If on a dock

- One per adult helper on dock, PFD **AMSE1**

Rescue Station in Cold Water—Procedure

Procedure

1. Make sure nonswimmers are known, and work with them one on one.
2. Explain to students that they will be practicing rescuing someone from the water. Remind them that at no time should rescuers allow the victim to grab them.
3. Explain additional hazards when rescuing someone onto a dock or an inflatable buoyant apparatus:
 - “Victims” may be injured by inaccurate throws of rescue devices.
 - Rescuers may fall in the water.
 - Rescuers or the person being rescued may injure their backs.
4. Have students and adult assistant don immersion suits. Students wait with their buddy while the adult “victim” enters the water slowly and safely and swims 15 feet away.
5. Direct the students, one at a time, to throw the rescue device beyond, not at, the victim and pull it so it is within arm’s length of the victim.
 - Remind students that they must not throw the rescue device if the victim isn’t looking.
 - Both rescuers and victims should stop their activity if it hurts their backs.
 - If the rescue device is not within reach, have students pull it in and throw again until successful.
6. Once the victim is securely holding the rescue device, have students pull him/her to the dock or inflatable buoyant apparatus, which the victim will then hold. Have students use the proper technique to recover the victim onto the inflatable buoyant apparatus or dock.

Then have them practice rolling the victim onto the inflatable buoyant apparatus, using the correct procedure with a second rescuer.
7. Watch carefully for safety problems and ensure students switch roles.
8. Repeat the process until all students have thrown the rescue device and assisted in the rescues.
9. Debrief the activity, discussing rescue successes and problems.

Video and Warm-up Station

Note


If no video player or electricity is available, do this activity as a snack and warm-up station.

Objectives

After completing this activity students should be able to:

1. Explain how the HELP and Huddle positions prolong survival.
2. Explain one way alcohol negatively impacts water activities.

Additional Materials

- Adult to supervise and direct discussion
- VCR and television
- Cold water safety video. Suggestions: *Adventures in Boating* (30 minutes) (Note: the HELP position shown in this video does not protect the underarms and sides.) or *It Could Have Been Prevented* (17 minutes)


- Juice, hot drinks, and snacks
- Optional—Student Handout #1 or #2

Procedure

1. Explain to students that they will be warming up and watching a video.
2. Have students change into dry clothes.
3. Offer students drinks and snacks while waiting for everyone to change.
4. Distribute Student Handout #1 or #2 and show video while students are snacking.
5. Have students complete handout.
6. Discuss points raised in the video that are relevant to the day's activities.
7. If students are still cold, treat them for hypothermia.

Name: _____ Date: _____

Adventures in Boating

1. What happens when the man falls in the cold water? Why is this dangerous?

2. Discuss the problems with putting on a PFD in the water.

3. What is wrong with the HELP position shown in the video?

4. Explain how the HELP and Huddle positions prolong survival.

5. Regarding the skiff with the fishermen in it—what would you do in that situation?

6. What mistakes that led to the “fatal chain?”

Adventures in Boating

1. What happens when the man falls in the cold water? Why is this dangerous?
He gasps; you can suck in water and drown.
2. Discuss the problems with putting on a PFD in the water.
It is hard to do and you might drown when doing it.
3. What is wrong with the HELP position shown in the video?
It doesn't protect the underarms or sides of the chest.
4. Explain how the HELP and Huddle positions prolong survival.
They help retain body heat.
5. Regarding the skiff with the fishermen in it—what would you do in that situation?
Hold onto the boat, try to push skiff horizontal so could get on top of it, try to put on a PFD, yell for help, if shore was close try to kick skiff to shore while keeping most of body out of the water.
6. What mistakes led to the “fatal chain?”
No PFD, alcohol consumption, weather, wrong vessel, overloading, no float plan, etc.

Name: _____ Date: _____

It Could Have Been Prevented

1. “Mike’s had too many friends and family members drown, so he and his wife Deborah make sure everyone in their boat wears a personal floatation device.” How is this statement important to the story?

2. How did Richard save himself? What kinds of things might you use to help you float?

3. How many different kinds of PFDs are shown in the section showing types of PFDs? Which will keep you the warmest?

4. Explain how the HELP and Huddle positions prolong survival.

5. How does alcohol negatively impact water activities?

It Could Have Been Prevented

1. “Mike’s had too many friends and family members drown, so he and his wife Deborah make sure everyone in their boat wears a personal floatation device.” How is this statement important to the story?

One boat didn’t follow this rule and one person drowned.

2. How did Richard save himself? What kinds of things might you use to help you float?
He held onto a gas can. Other things that might work are jerry jugs, cushions, floats, hatch covers, Styrofoam, coolers, etc.

3. How many different kinds of PFDs are shown in the section showing types of PFDs? Which will keep you the warmest?

Coveralls, float coat, Stormy Seas jacket, Type V hybrid, suspenders, immersion suit. The warmest is the immersion suit, followed by the coveralls.

4. Explain how the HELP and Huddle positions prolong survival.

They help retain body heat.

5. How does alcohol negatively impact water activities?

It reduces judgment, vision, coordination, reaction time, ability to rescue self or others, etc.

Emergency Medical Services Station

Objectives

After completing this activity, students should be able to:

1. Explain what happens after a 911 health emergency call is placed (or whatever system is used in your community to access emergency medical assistance).
2. List three pieces of emergency medical equipment carried by the local emergency medical response (EMS) team.

Additional Materials

- EMS personnel or appropriate health care professionals from your community
- Ambulance and other applicable emergency response equipment

Procedure

1. Have EMS personnel explain what happens when a 911 health emergency call is placed (or whatever system is used in your community to access emergency medical assistance). Explain what each member of the team does en route to and at the emergency scene.
2. EMS personnel show students at least three items of emergency medical equipment and demonstrate how the emergency equipment is used. Students use materials or equipment only with approval of EMS personnel.

Post Pool/Cold Water Activity Summary

Time: 60 minutes

Overview

Debrief pool and cold water survival skills activities.

Objectives

After completing this activity, students should be able to:

1. Explain three things they learned at the pool or cold water activity.

2. State five safety rules or hazards from the pool or cold water activity.
3. Write a thank you note, explaining what they appreciated about the help they received at the pool or cold water exercise.

Materials

- Paper or roll of construction paper
- Marking pens, crayons, pencils, pens
- Envelopes and stamps

Procedure

1. Explain to students that they will be writing thank-you notes to people who helped at the pool or cold water activity.
2. Review pool or cold water event, including what was learned, what went well, and what didn't go well.
3. Have students write and illustrate their own thank-you notes to all who helped. Or, using a section from a roll of paper, trace an immersion suit, have students write their thank-you notes on small pieces of paper, and glue the notes onto the suit.

This activity addresses Alaska Content Standards:

Language Arts A-1 Effective writing, A-2 Writing conventions, A-3 Demonstrate speaking skills, D-1-A Personal experience and prior knowledge

Skills for a Healthy Life A-1 Personal well-being, A-2 Healthy behaviors, A-3 Injury

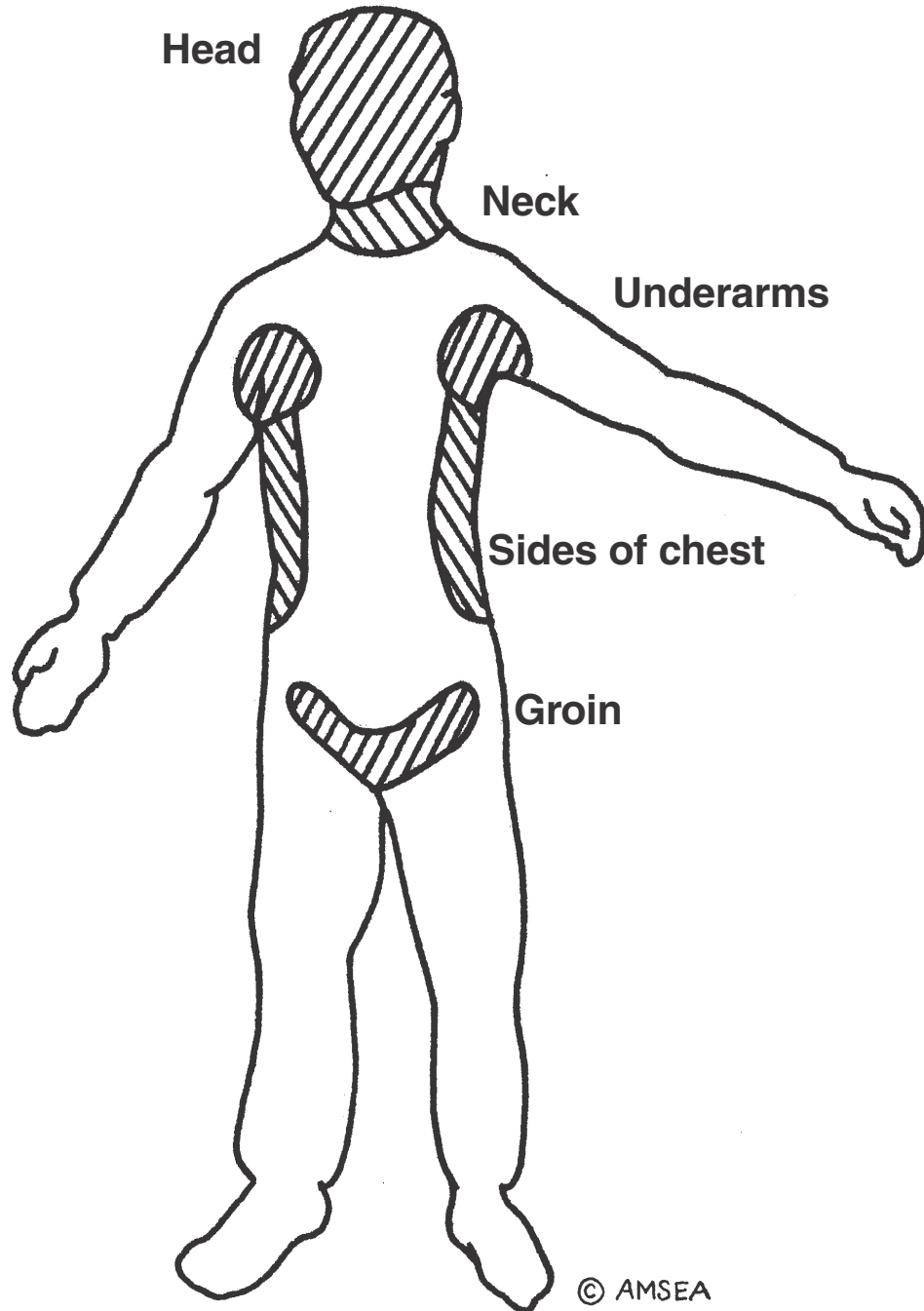
prevention, A-6 Making informed choices, B-1 Risk and consequence, B-2 Effective communication, D-2 Safe and healthy environments

Arts A-1 Participate in the arts



Overhead Masters

Five High Heat Loss Areas



How Heat Is Lost and Gained

HEAT LOSS

HEAT GAIN



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Hypothermia

Causes

- Poor judgment
- Wet
- Wind
- Cold
- Improper clothing

Contributing factors

- Age
- Body fat
- Alcohol
- Other drugs
- Mental depression

Prevention

- Use good judgment
- Wear layered clothing
- Avoid getting wet
- Eat nutritious food regularly
- Rest frequently

Signs and Symptoms

- May include feeling cold, shivering or not shivering, impaired judgment, altered level of consciousness (confusion, mumbles, stumbles, fumbles), depressed vital signs, response to verbal or painful stimuli may be delayed or absent

- Can be difficult to recognize
- Severely hypothermic victims may look dead, treat them anyway

Treatment

- If conditions indicate the possibility of hypothermia, treat for it
- Handle the victim very gently
- Prevent further heat loss: get victim out of the weather, remove wet clothing, add a hat
- In a water rescue, lift victim horizontally if possible without causing delay
- Check for breathing and pulse—give CPR if necessary
- Never give alcohol
- Continue treatment for at least 1 hour
- Keep trying!

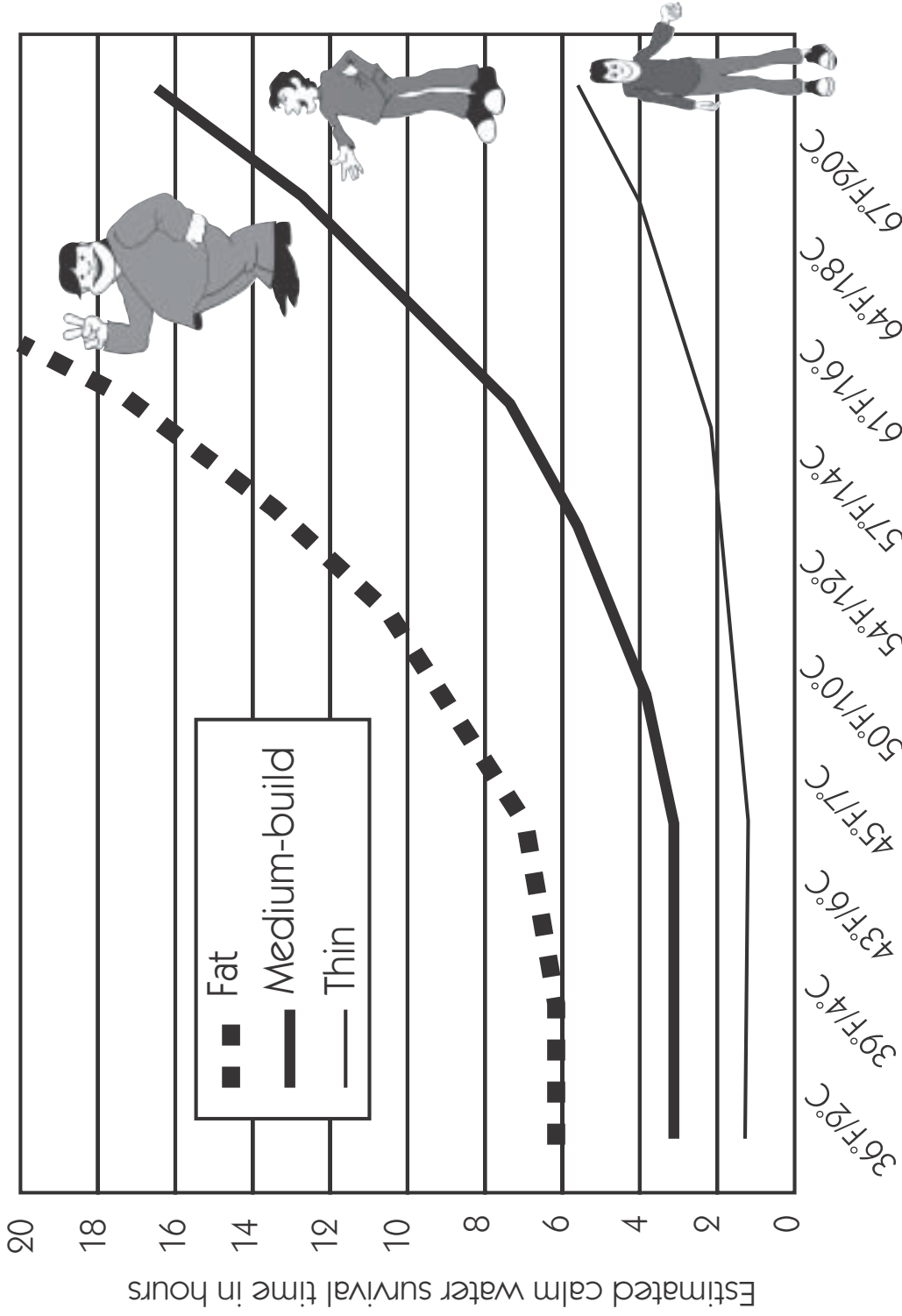
Transport

- Continue treatment during transport
- Get severely hypothermic victims to a medical facility as soon as possible

**Remember . . .
Hypothermia Can Kill!**

Estimated Survival Time for 3 Body Types

(wearing everyday, lightweight clothing)



Water Temperature

Source: National Hyperbaric Center, Aberdeen, Scotland

Inner Layer

- **Purpose**—to wick moisture from skin and provide some insulation
- **Materials**—polypropylene and other synthetics, wool
- **Should be in close contact with your skin**



Middle Layers

- **Purpose**—provide additional insulation, and absorb or transmit moisture wicked away from inner layer
- **Materials**—polypropylene or other synthetics, wool
- **Should be easy to remove when working to prevent sweating**
- **Should fit loosely to hold warmed air**
- **May use multiple insulating layers**
- **Should have adjustable closures**



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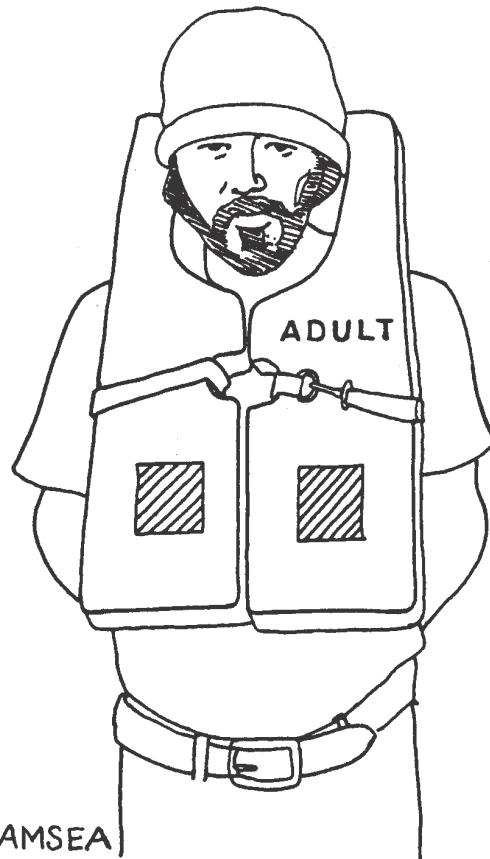
Outer/Shell Layer

- **Purpose**—protects from wind, wet, and weather
- **Materials**—water and wind barrier fabrics such as rubber, vinyl, coated nylon, or specially designed fabrics
- **Windproofing** keeps cooler air out, warmed air still
- **Should fit loosely**
- **Should have adequate closures**
- **Should let body moisture escape**



U.S. Coast Guard Approved Type I PFD— Offshore Life Jacket

- Comes in several styles
- Provides a minimum of 22 pounds buoyancy
- Turns most (80%) unconscious people face up in the water
- Offers minimal hypothermia protection
- Bulky



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U.S. Coast Guard Approved Type II PFD— Nearshore Buoyancy Vest

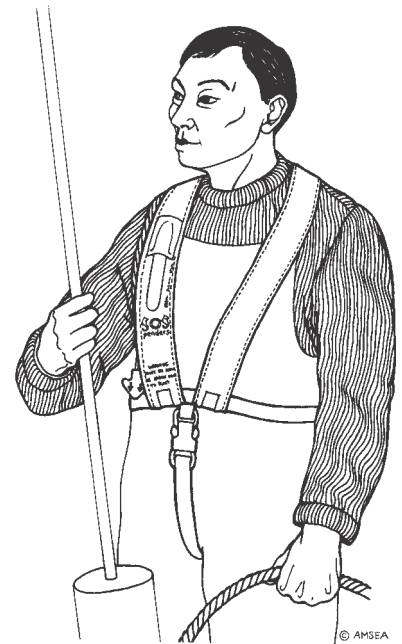
- Horse-collar-shaped device
- Provides minimum 15.5 pounds buoyancy
- Turns some (20%) unconscious people face up in the water
- Offers minimal hypothermia protection
- Can look similar to Type I



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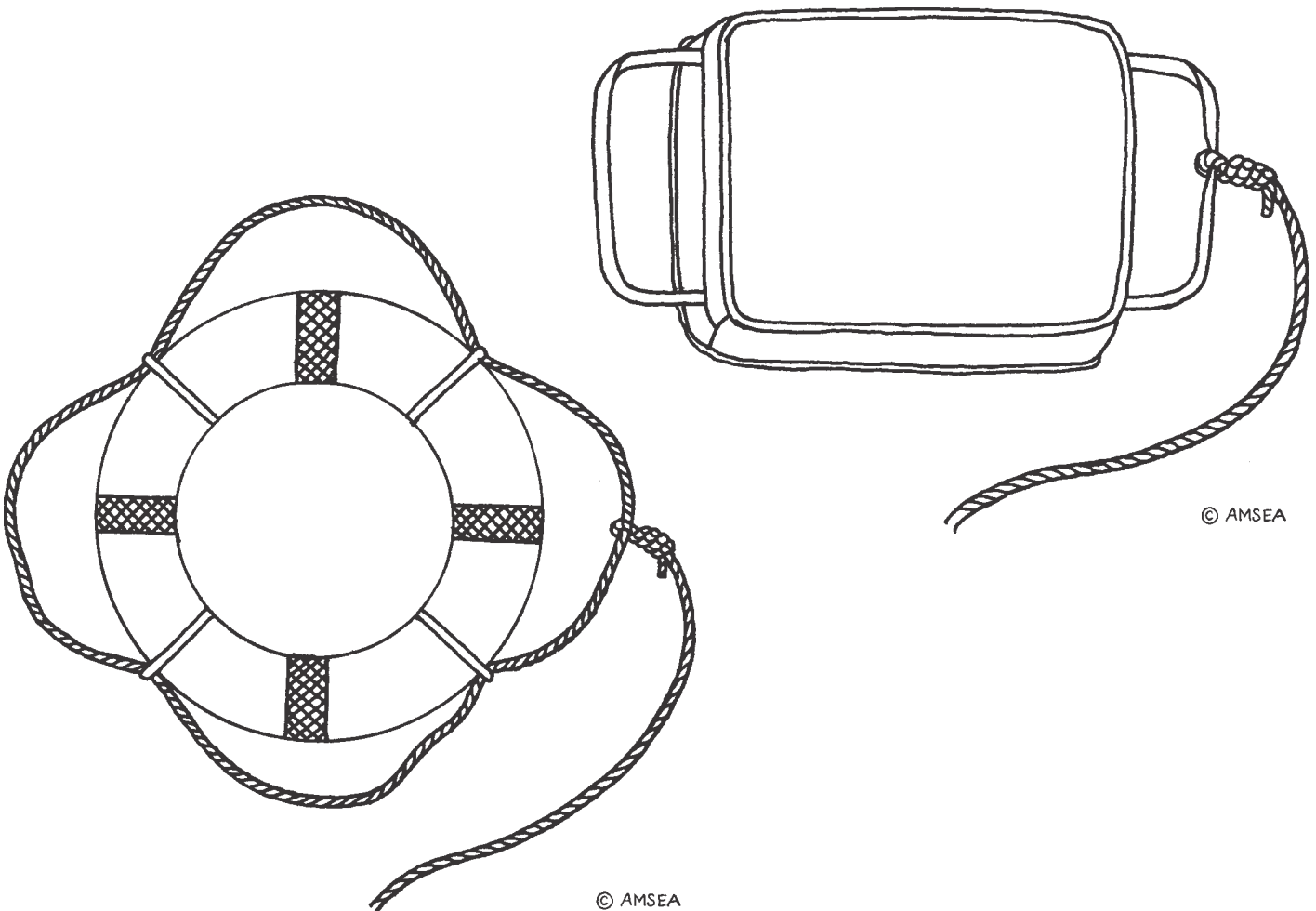
U.S. Coast Guard Approved Type III PFD— Flotation Aid

- Comes in a variety of styles, colors, and sizes
- Includes vests, float coats, and other special-use devices
- Provides a minimum of 15.5 pounds buoyancy
- Has little or no ability to turn unconscious people face up in the water
- Many provide increased hypothermia protection
- Relatively comfortable and easily worn



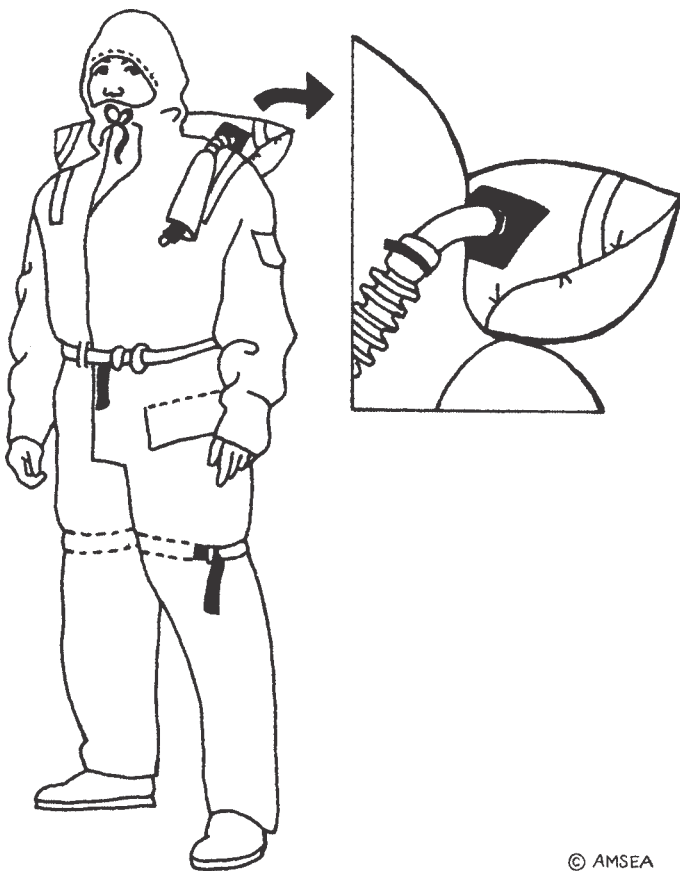
U.S. Coast Guard Approved Type IV PFD— Throwable Device

- **Throwable device designed for rescue**
- **Includes ring buoys and boat cushions**
- **Provides a minimum of 16.5 pounds of buoyancy**
- **In water, lie with chest on top of it with arms wrapped in straps**
- **Does not substitute for Types I, II, or III**
- **Should have a line attached for throwing and retrieving**
- **Should have light-reflective tape on both sides**



U.S. Coast Guard Approved Type V PFD— Special Use Device

- Any U.S. Coast Guard approved PFD for restricted use
- Comes in a variety of styles (e.g., flotation coveralls, sail board harness, commercial whitewater vest)
- Is U.S. Coast Guard approved only when used in the prescribed manner
- Provides a minimum of 15 to 22.5 pounds of buoyancy
- Some provide good hypothermia protection



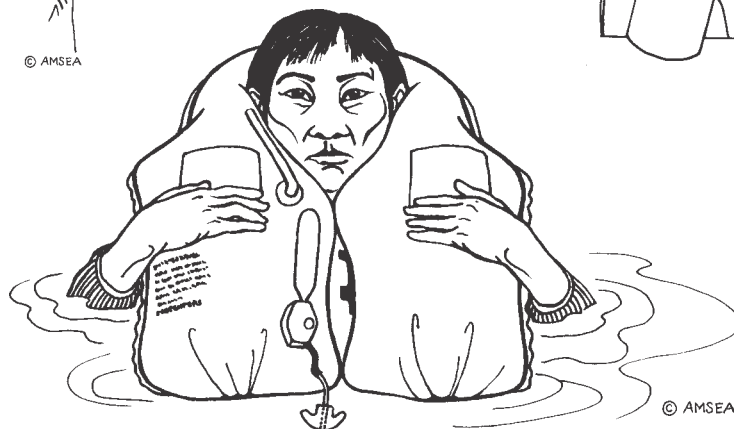
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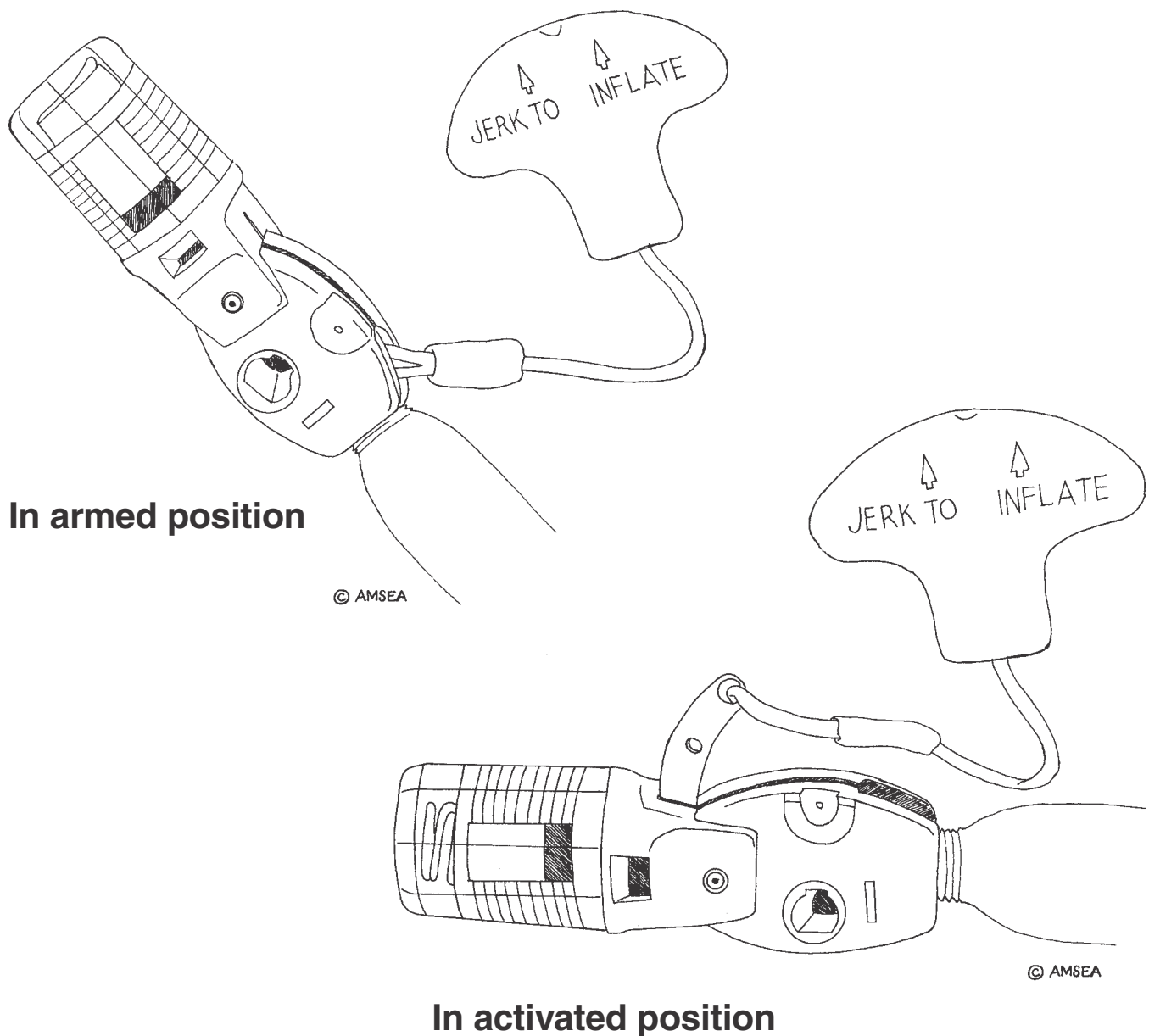
Inflatable PFDs

- Some are U.S. Coast Guard approved—none are currently approved for children
- Provide a minimum of 15.5 pounds of buoyancy when inflated; some have up to 40 pounds of buoyancy when inflated
- Most have no inherent buoyancy (buoyancy when not inflated)
- All adult models can be inflated by CO₂ cartridge or by mouth
- Come in a variety of styles
- Require more maintenance than other PFDs



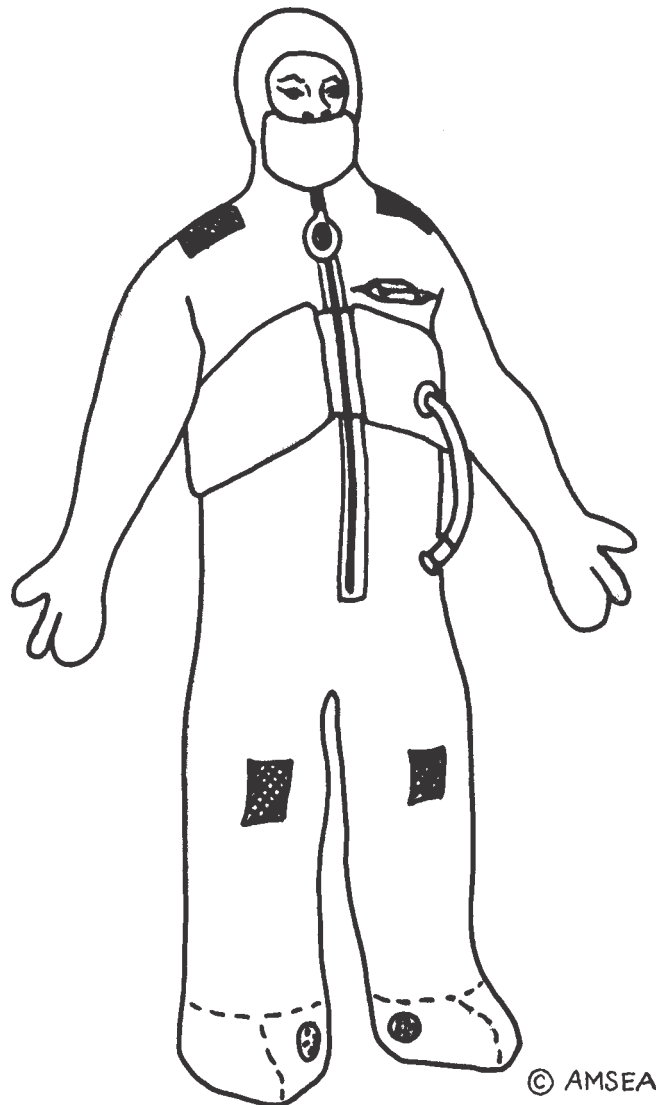
Water-Activated CO₂ Inflation Mechanism

- Is water-activated
- Must be in a U.S. Coast Guard approved inflatable PFD
- PFD can also be manually and orally inflated
- Must be maintained
- Has visual red and green markers to denote if properly armed



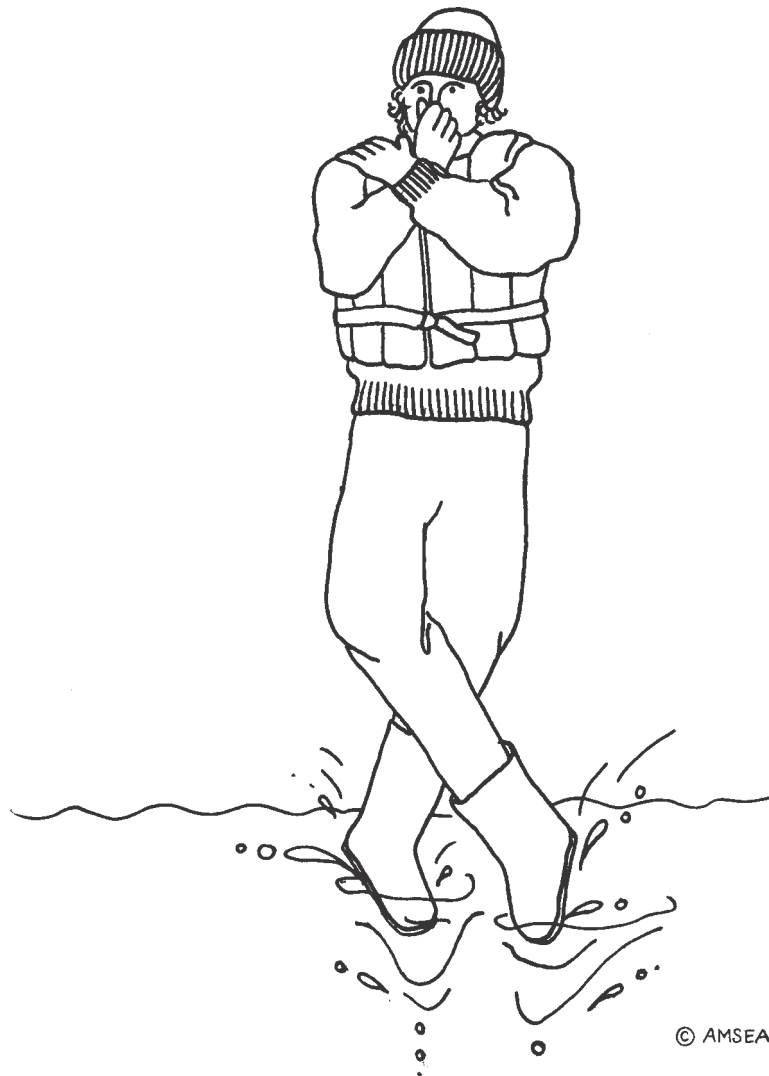
Immersion Suit

- Provides minimum of 22 pounds buoyancy
- Designed to be worn when abandoning ship
- Not functional as a work PFD
- Offers the greatest hypothermia protection of all PFDs
- Will keep you dry if it fits, is well-maintained, and worn properly
- Should be stored in an accessible location



When Easing into the Water Is Not an Option with a PFD

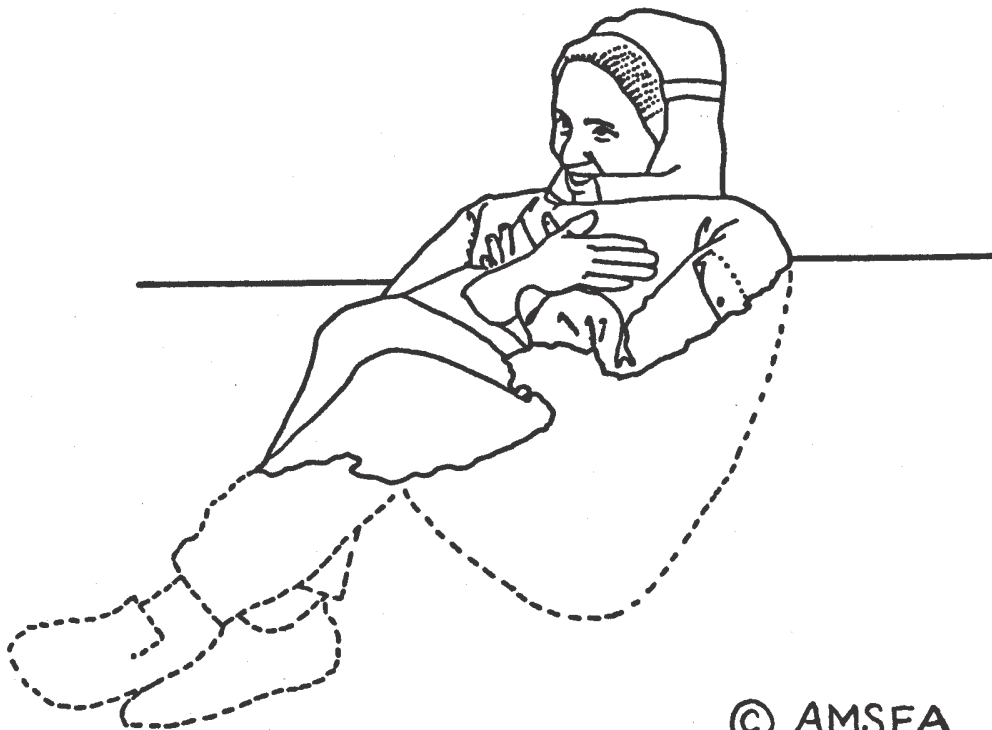
- Stand with your side to the water (facing the bow or stern of the boat)
- Hold your nose and cover your mouth with one hand
- Cross your other arm over first arm and grab opposite shoulder of your PFD
- Check the water below for people and debris before jumping
- Step out and away from boat feet first, cross legs as you descend



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HELP—Heat Escape Lessening Position

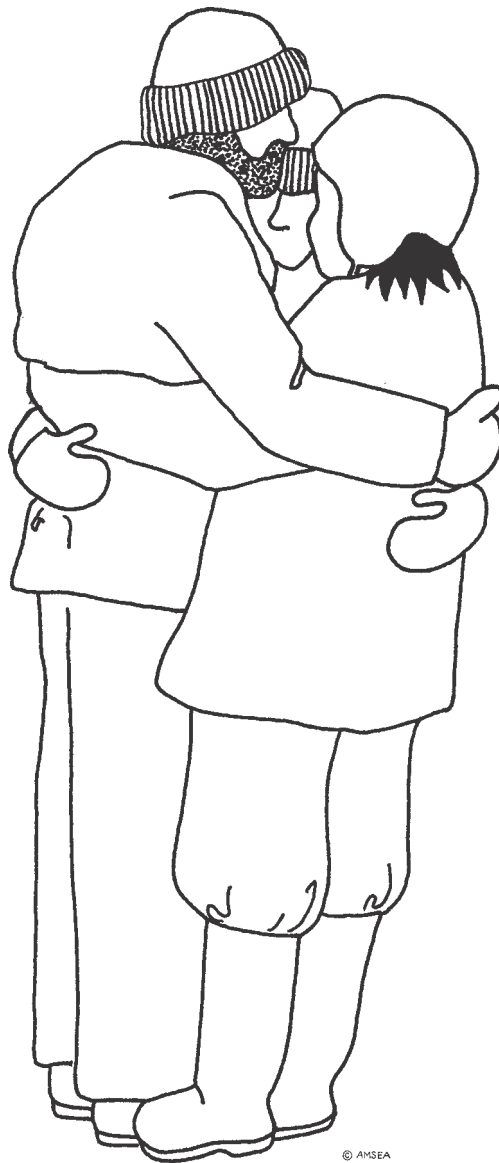
- Protects the underarms, sides of chest, and groin
- Hold arms close to sides
- Hold legs close together
- Don't hold on to knees
- Primarily a calm water technique
- HELP allows you to Stay Still



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Huddle Position

- Requires that most people in Huddle are wearing a PFD
- Protects sides of chest and groin
- Slows water flow over front of body
- Position allows you to Stay Still and Stay Together
- Primarily a calm water technique



Donning an Immersion Suit

You need to be able to don your immersion suit quickly in an emergency. Practice these steps. Remember to stay low to minimize dangers from a moving vessel.



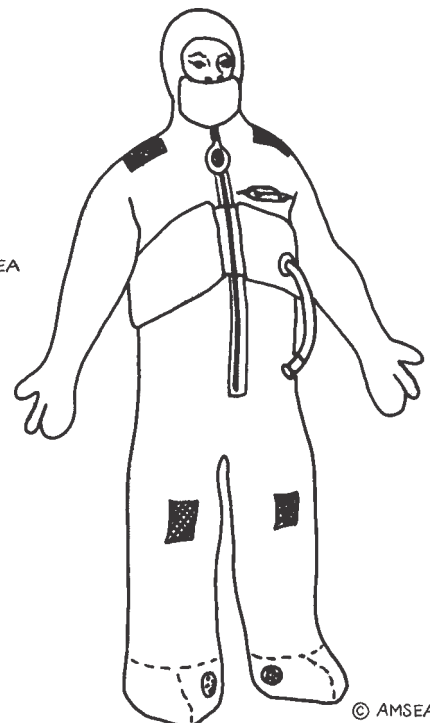
1. Lay your suit out on the deck.

2. Sit on and work your legs into the suit (plastic bags over shoes make donning easier).

3. Put your nondominant arm in first. Reach back and pull on the hood.



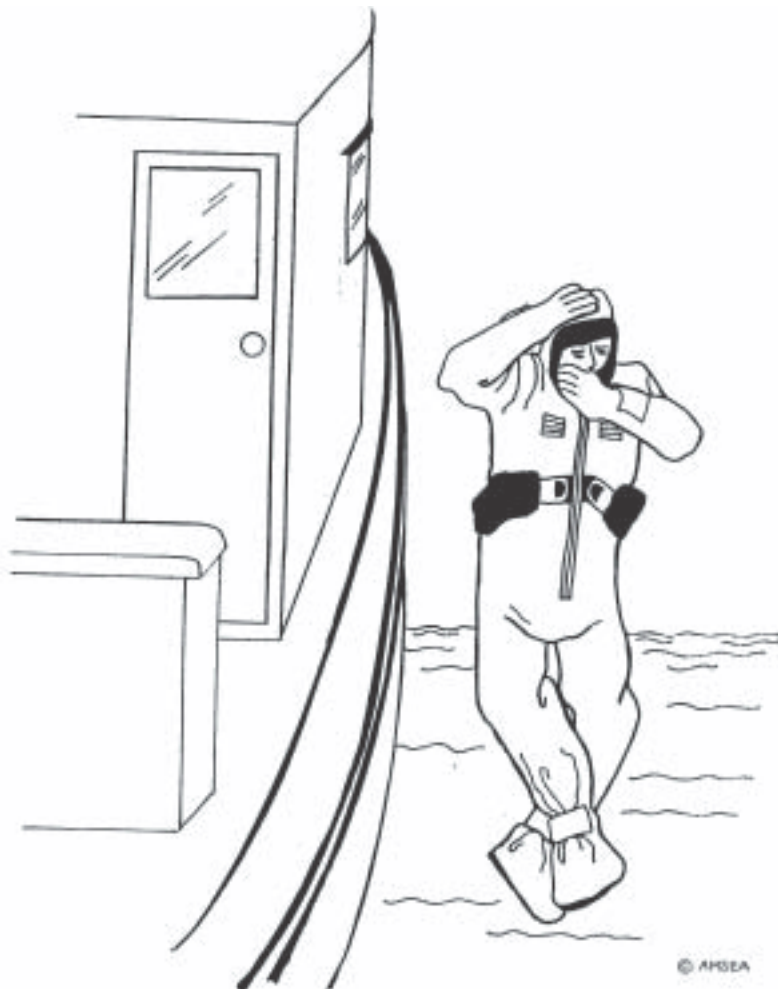
4. Put your dominant arm in. Hold the zipper below the slide with one hand, arch your back, and pull zipper with the other hand, fully zipping suit.



5. Secure the face flap.

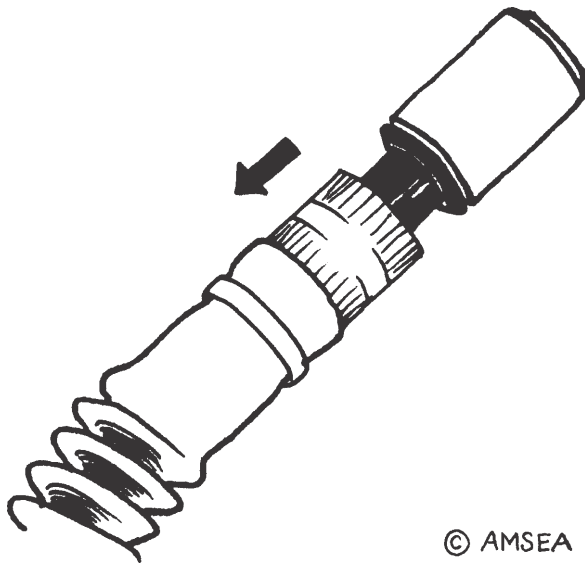
When Easing into the Water Is Not an Option with an Immersion Suit

1. Be sure air bladder or pillow is not inflated to avoid spinal injury
2. Open face flap, insert hand into suit to protect airway and allow air to escape
3. Stand with your side to the water (facing the bow or stern of the boat)
4. Protect your head with arm nearest boat or dock
5. Check the water below for people and debris before jumping
6. Step out and away from boat feet first; cross legs as you descend



Inflating the Immersion Suit Air Bladder

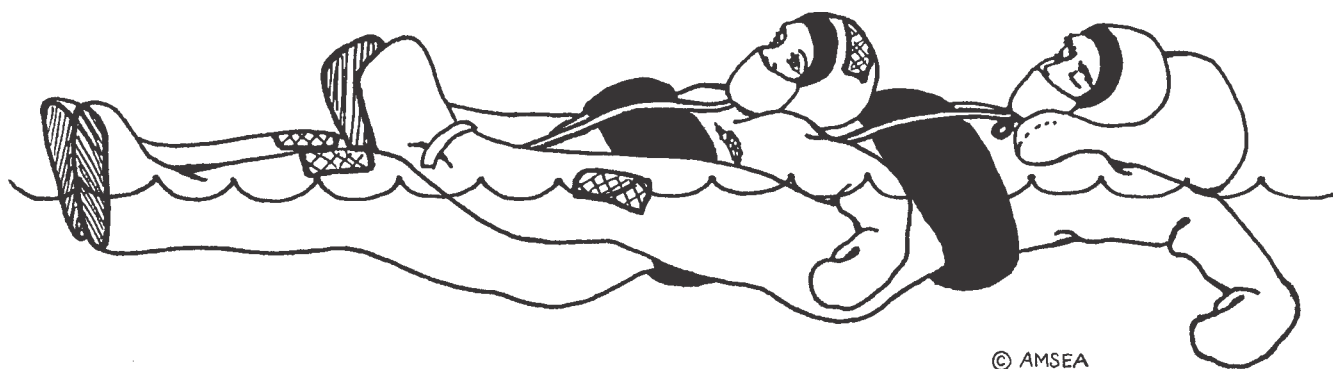
1. Make sure the knurled ring is screwed away from mouthpiece
2. Hold hose in your hand, grip mouthpiece with your teeth, and push until valve opens
3. Blow air into bladder until full



© AMSEA

Chain Swim

- For use with immersion suits
- Primarily a calm water technique
 1. Lie with your head on your buddy's belly and your body between your buddy's legs
 2. Keep your arms above their legs
 3. Hold onto the person below you with your legs
 4. Use your arms like oars to swim

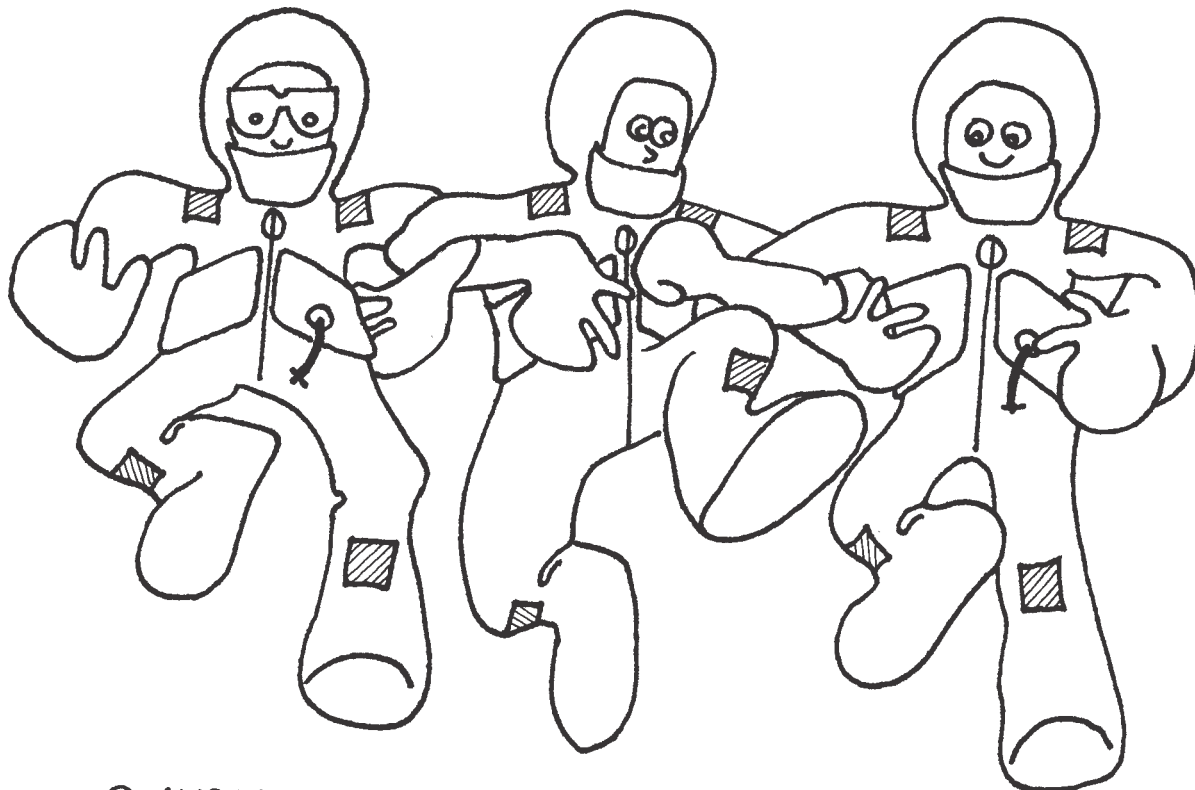


Benefits:

- Helps you Stay Together and Stay Warm
- Improves morale
- Makes you easier to see
- Is a way to move an injured person

Elbow Lock

- Link arms at the elbows
- Keep hands up near shoulders to help maintain position
- Primarily a calm water technique



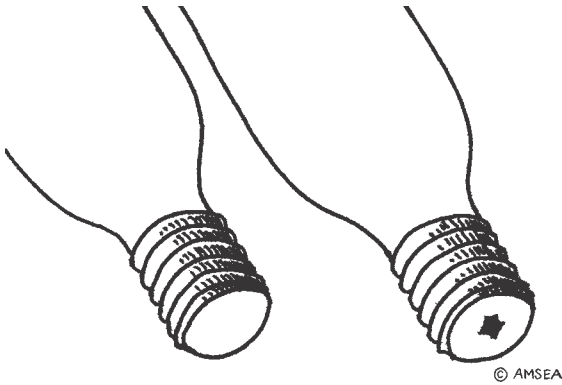
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Benefits:

- Helps you Stay Together
- Improves morale
- Makes you easier to see, especially with kicking feet

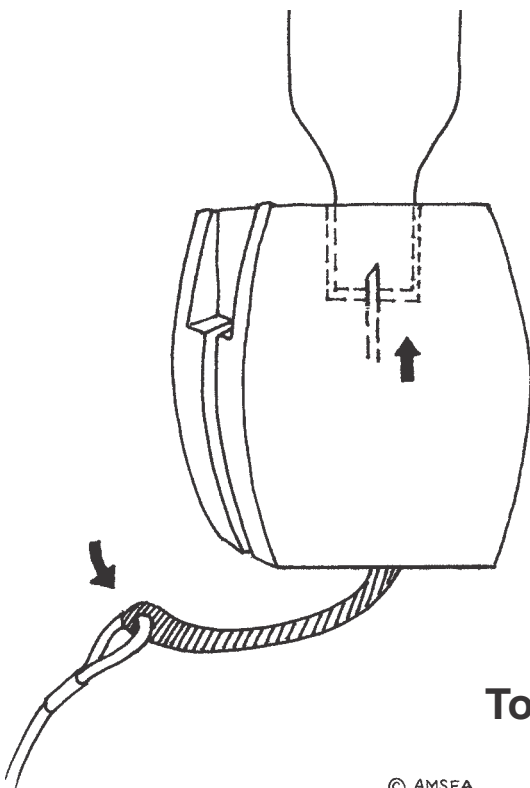
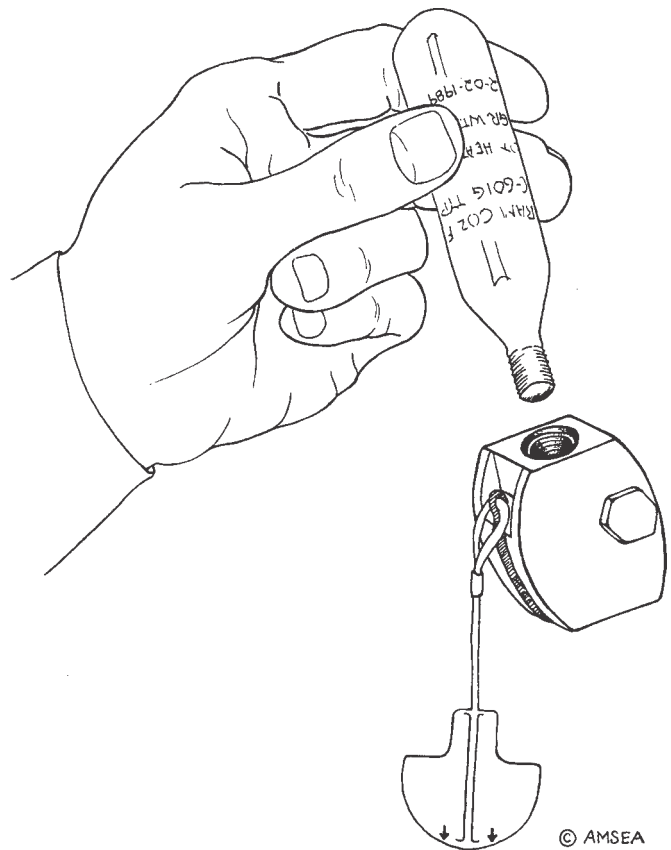
Manual CO₂ Inflation Mechanism Maintenance

Check frequently and make sure the cartridge is unused



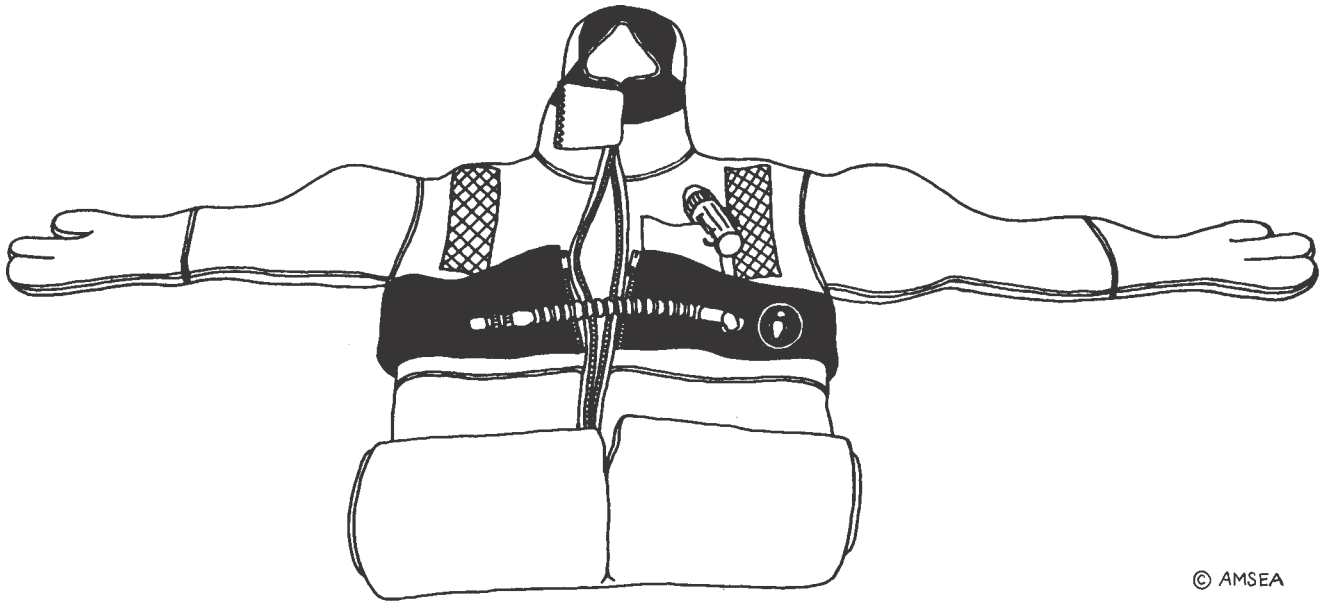
Unused (left) and used (right) CO₂ cartridges

When installing a new cartridge, make sure the inflator mechanism is up



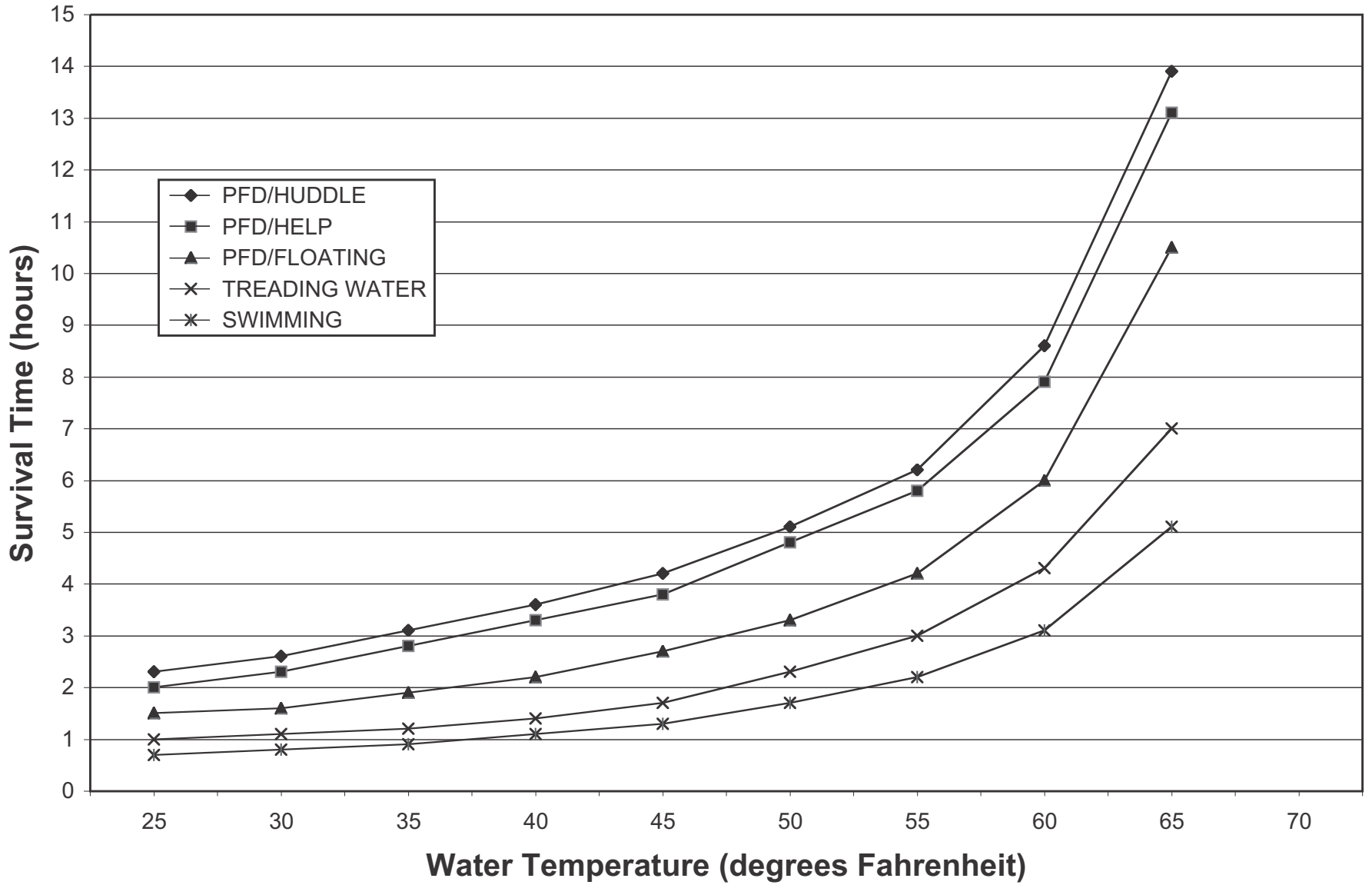
To inflate, pull the mechanism down to push a pin into the CO₂ cartridge

Care and Maintenance of Immersion Suits



- **Always follow manufacturer guidelines**
- **Visually inspect monthly**
- **Lubricate zippers regularly with lubricant provided by manufacturer**
- **Store unzipped with plastic bags in hood to ease donning with boots or shoes**
- **Unless instructions state otherwise, roll your suit with air bladder deflated. Do not fold.**

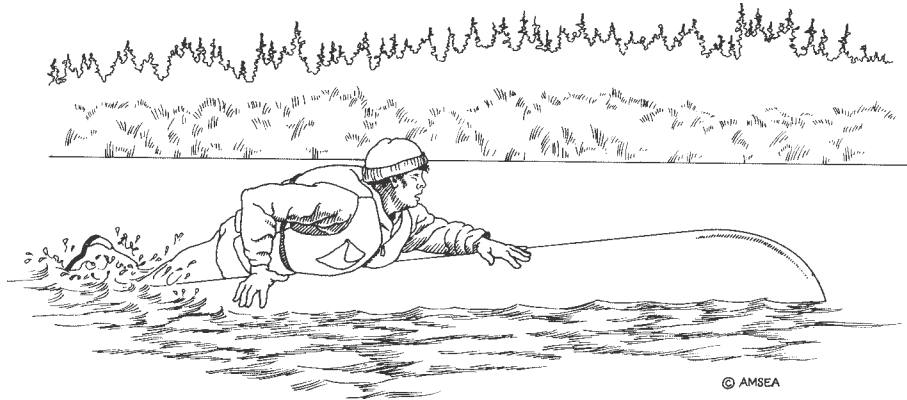
Survival Time vs. Water Temperature



Source: U.S. Coast Guard Seamanship Manual

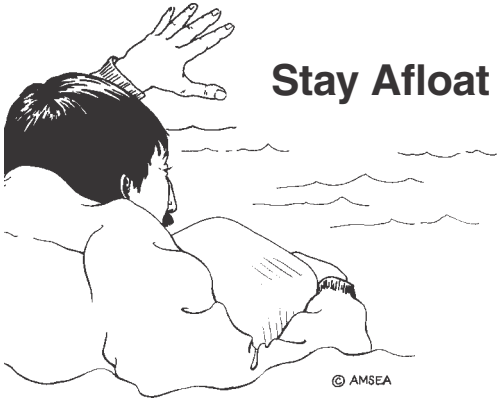
Stay Rules

**Stay with
the Boat**



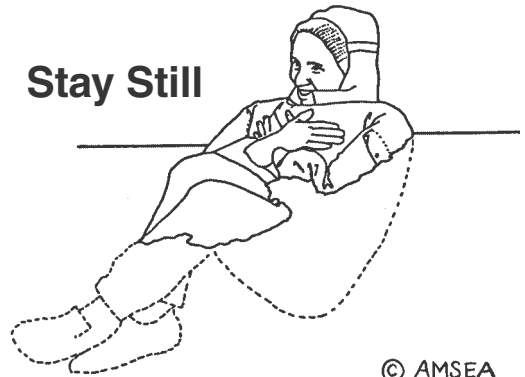
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Stay Afloat



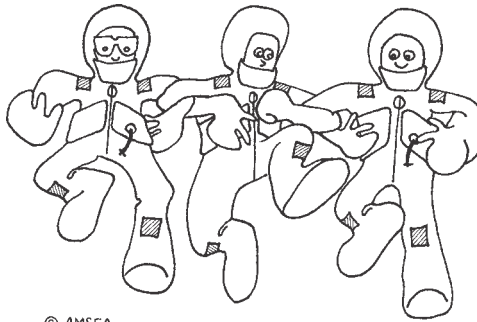
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Stay Still



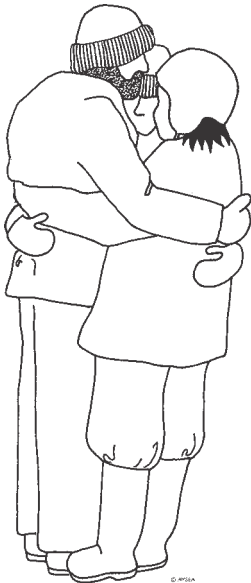
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**Stay Together,
Stay Dry**



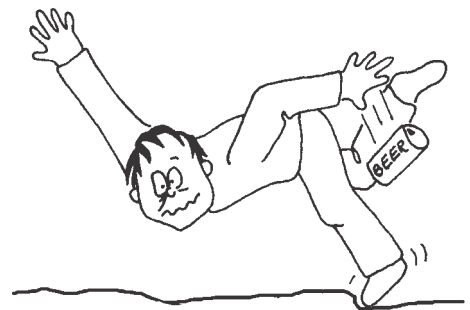
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Stay Warm



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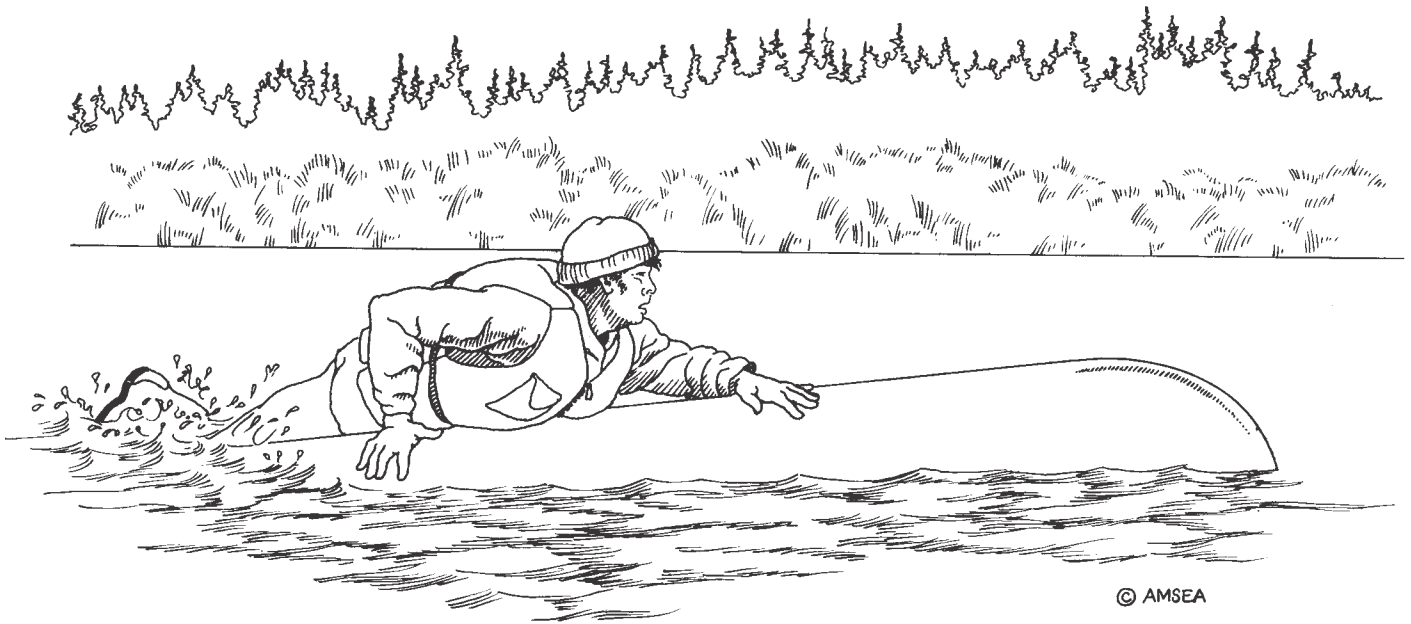
Stay Sober



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Stay with the Boat

- Don't abandon ship until it abandons you
- Get on top of overturned boat if possible
- Helps you Stay Dry
- Helps rescuers find you

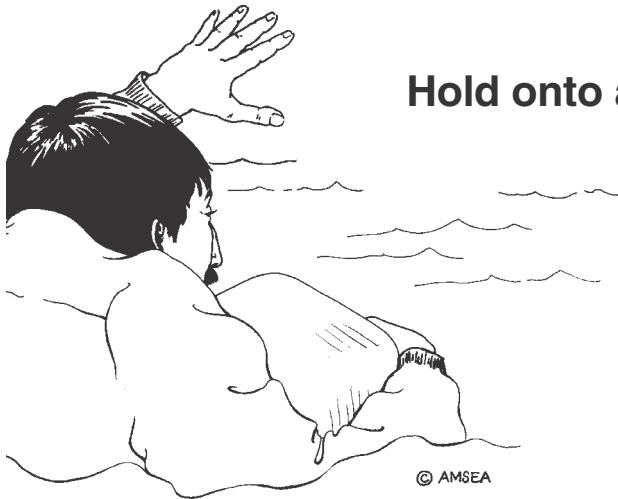


Stay Afloat

Wear a PFD—if possible, don an immersion suit

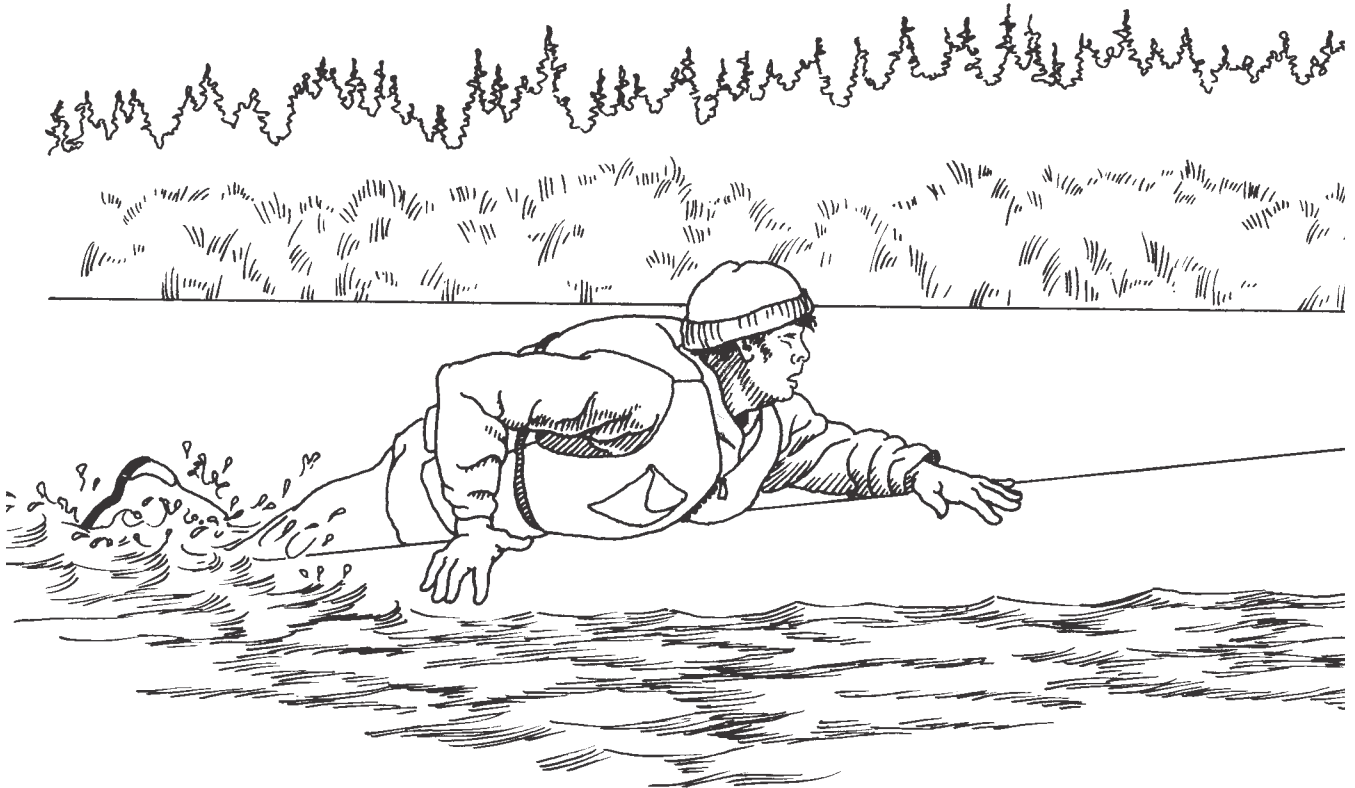


Hold onto a floating object



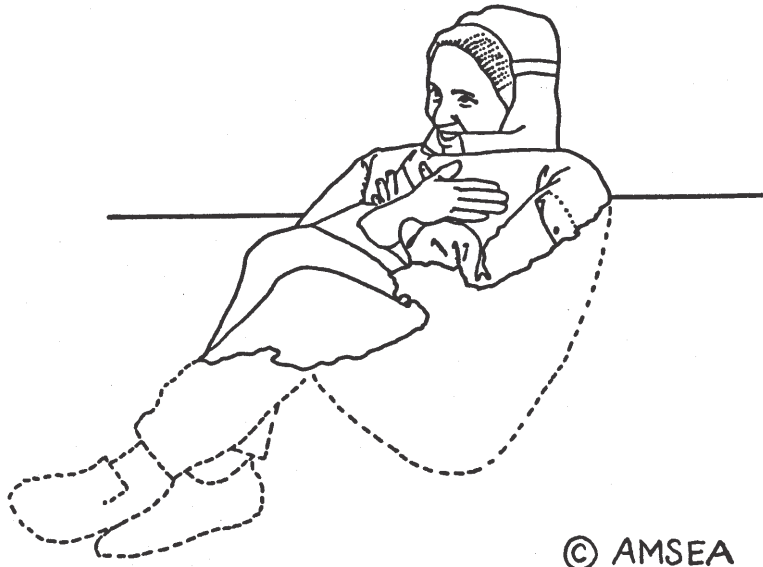
Stay Dry

- Wear a PFD—if possible, don an immersion suit
- If possible, immerse slowly, keeping head dry
- Get out of the water as soon as possible
- If you can't get out of water, get as many high heat loss areas out as possible



Stay Still

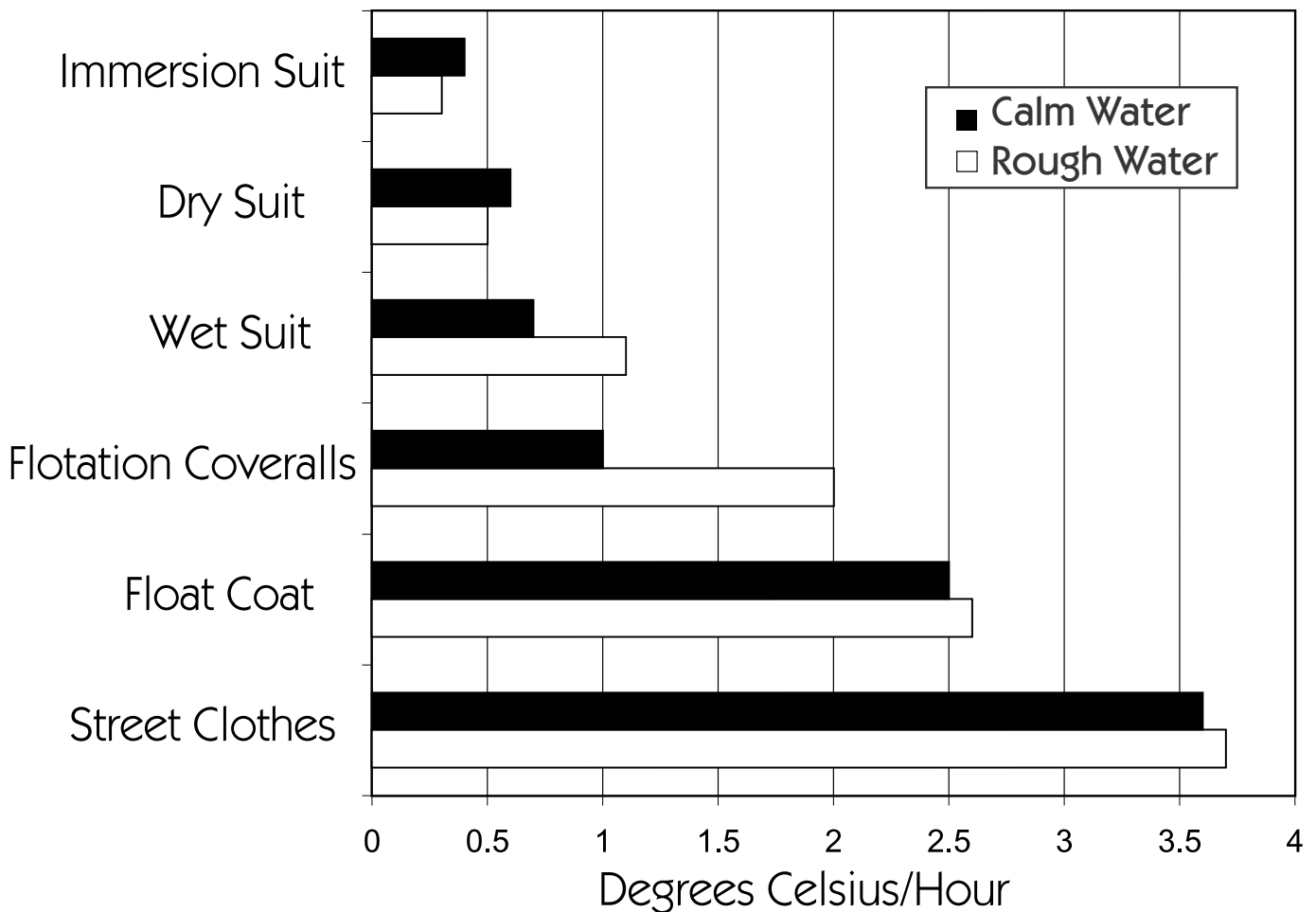
- **Wear a PFD—it is difficult to stay still without one**
- **Use HELP and Huddle**



Cooling Rates and Clothing

- The right clothing helps you Stay Warm
- Protect high heat loss areas before boat sinks, if possible
- Don an immersion suit if possible
- Get as much of body as possible out of water

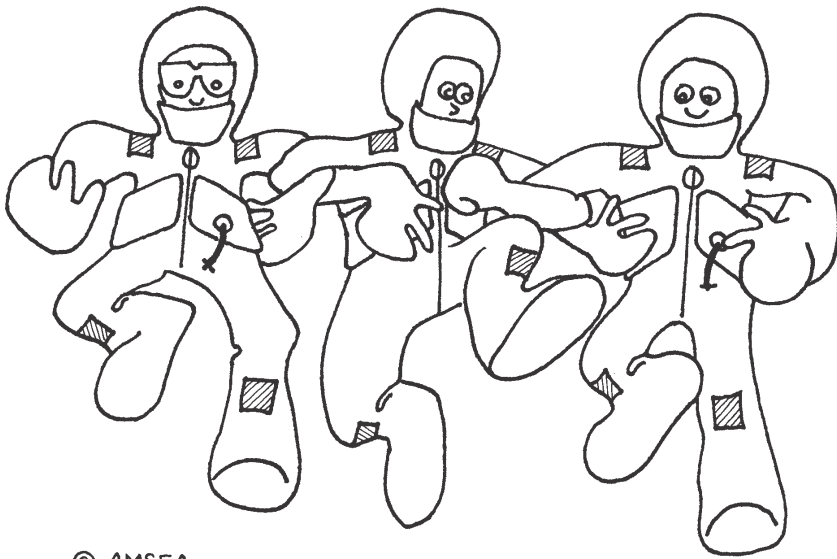
Cooling Rates



From data published by Steinman, Nemiroff, Hayward, and Kubilis

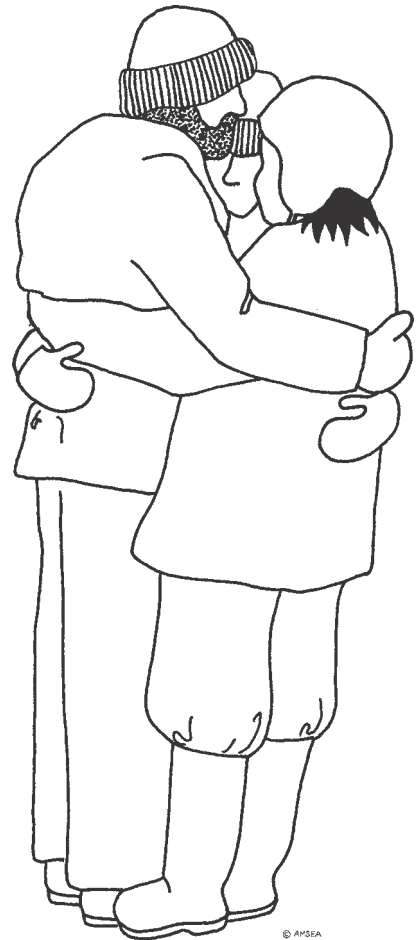
Stay Together

- Share body heat by assuming Huddle position
- Help each other
- You will be a bigger target
- It is easier to keep morale up



© AMSEA

Elbow Lock Position



© AMSEA

Huddle Position

Seven Steps to Survival

- In a survival situation, the decisions you make will be more important than the equipment you carry!
- Make the decision to live. Follow the Seven Steps:

1. Recognition: Recognize that you are or could possibly be in trouble. Act!

2. Inventory: Take into account things that work for and against you. Do first aid.

3. Shelter: Preserve body heat with materials that insulate and protect you from the environment.

4. Signals: Help rescuers find you by attracting attention and conveying the need for help.

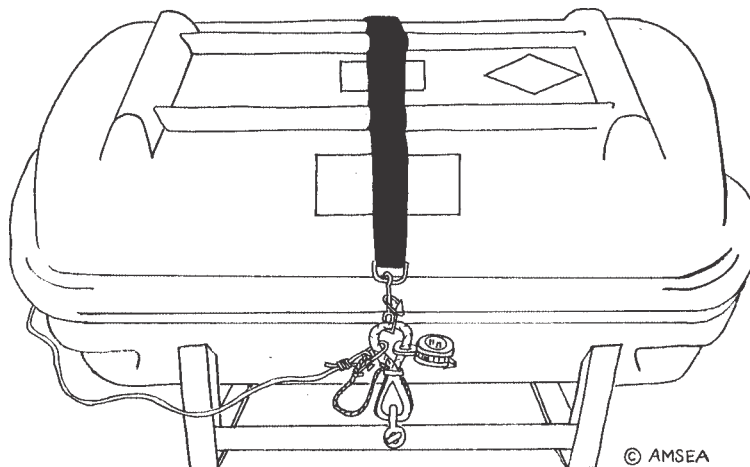
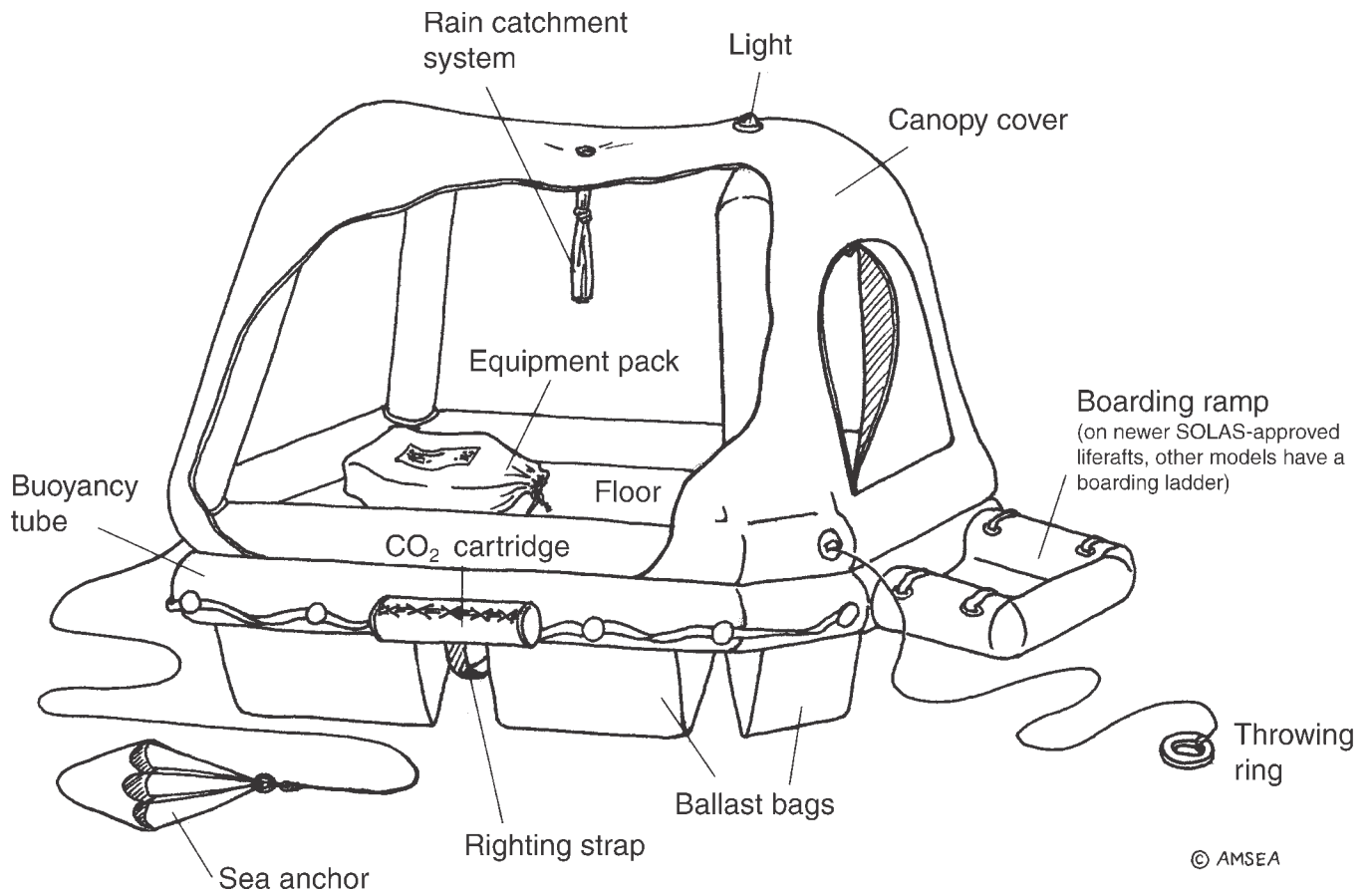
5. Water: Find a safe source of water. Drink two to four quarts a day.

6. Food: After you are safe and warm, food will help long waits.

7. Play: Stay busy and keep a positive mental attitude.

- Caution and creativity are your best friends ... Use them!

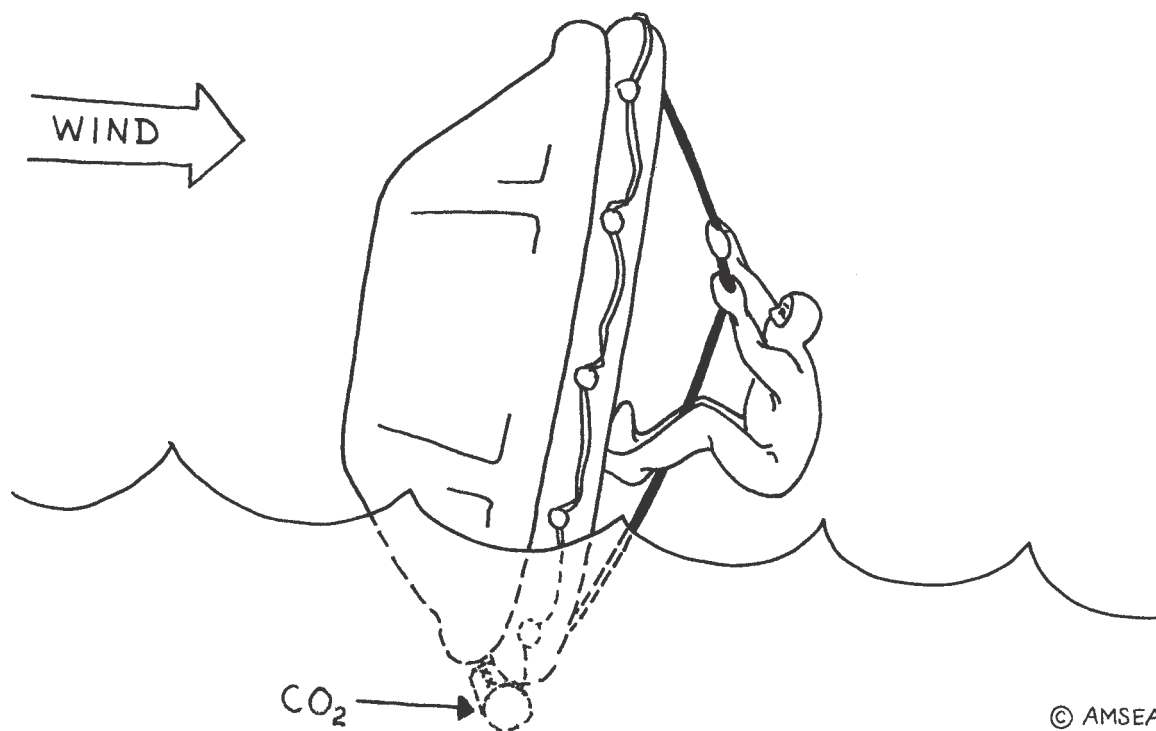
Features of a Liferaft



Liferafts are generally stored on deck in canisters like this.

How to Right a Liferaft

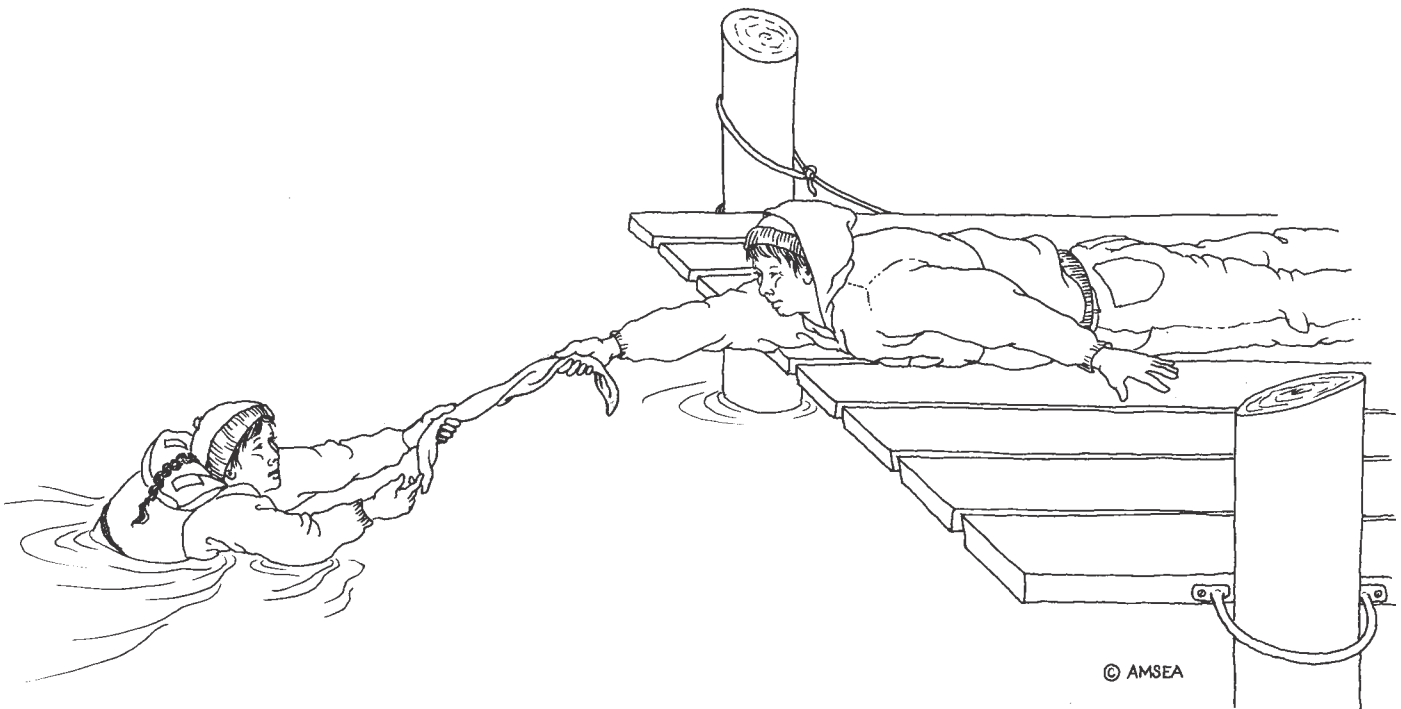
1. Put feet on CO₂ cylinder and grasp strap. (Do not wrap strap around hand/wrist.)
2. Climb strap and arch backwards pulling raft back.
3. Land on your back and follow strap to boarding ramp/ladder.
4. If trapped under raft, push floor up to make an air space. Work yourself to edge.



© AMSEA

Reach, Throw, Row, Don't Go!

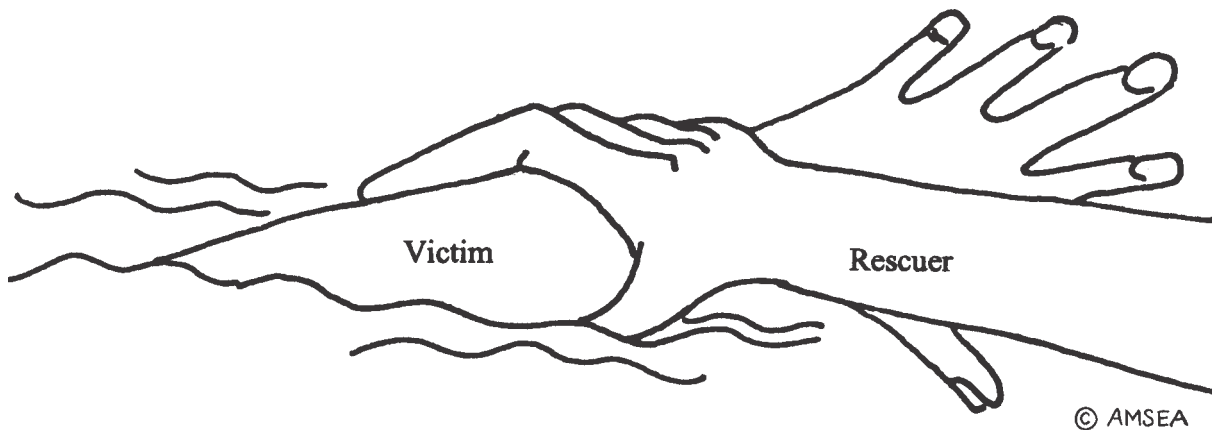
- Reach with an object when possible
- Extends your reach
- Creates a break so you can let go if in danger
- Position yourself so you cannot be pulled into the water
- Reach with anything you can find—towel, fishing pole, oar, clothes, etc.



Rescue Grip

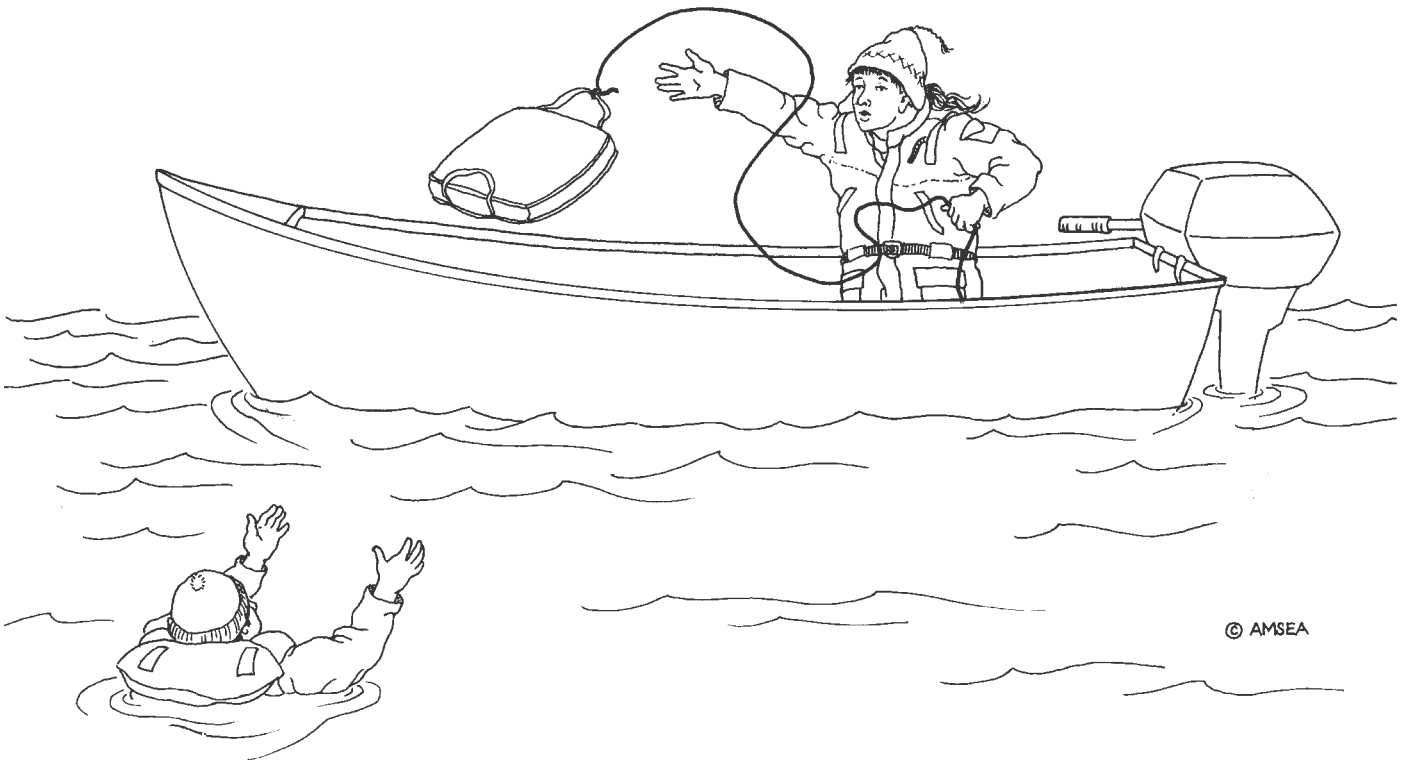
If no object is available and you must make direct contact with a person in the water

1. Grab the victim's wrist
2. Don't let the victim hold you!
3. Guide the victim's hand to the dock or side of the boat



Reach, Throw, Row, Don't Go!

- Throwing increases your reach
- Throw anything that floats, preferably with a long line attached
- Secure the line before throwing; do not wrap it around any part of you
- Throw beyond the victim's shoulder and pull the device to the victim



Reach, Throw, Row, Don't Go!

- Swimming rescues should be attempted only by a trained rescuer when there is no other alternative
- Drowning people often panic and can easily drown untrained rescuers

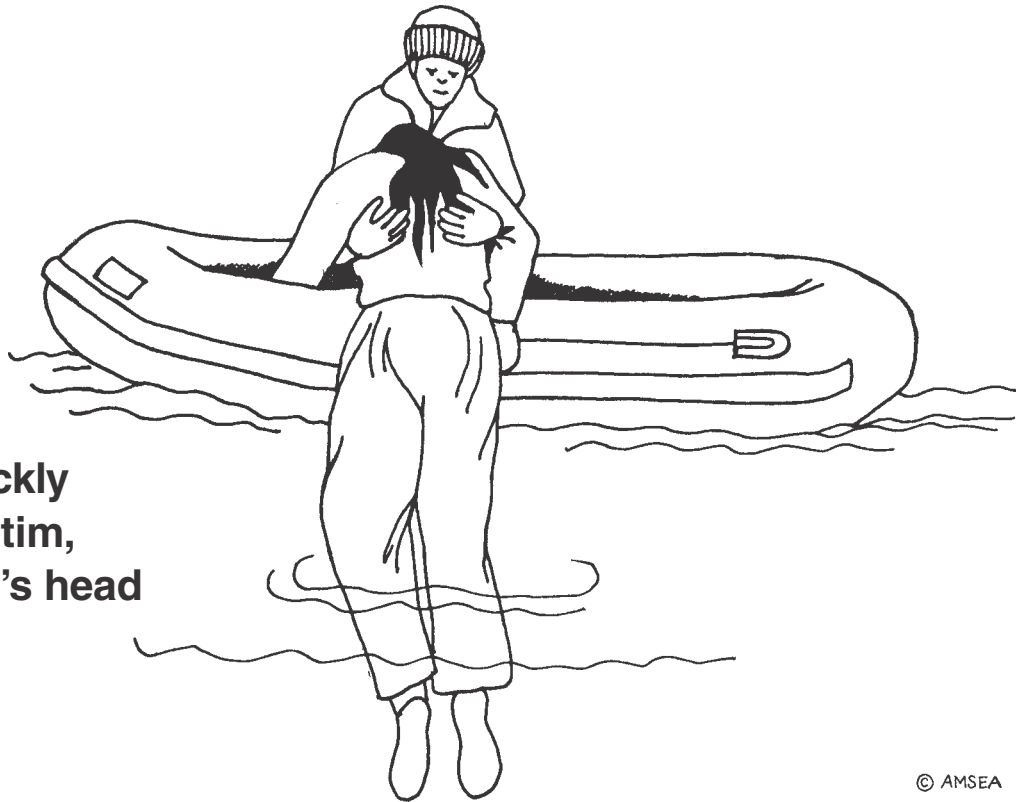


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Single Person Rescue—Bounce

Used when victim is unable to help

1. Grasp the victim's clothing or reach under victim's arms



2. Gently but quickly bounce the victim, keeping victim's head above water



3. When victim is at the highest point, step or lean back to pull the victim in

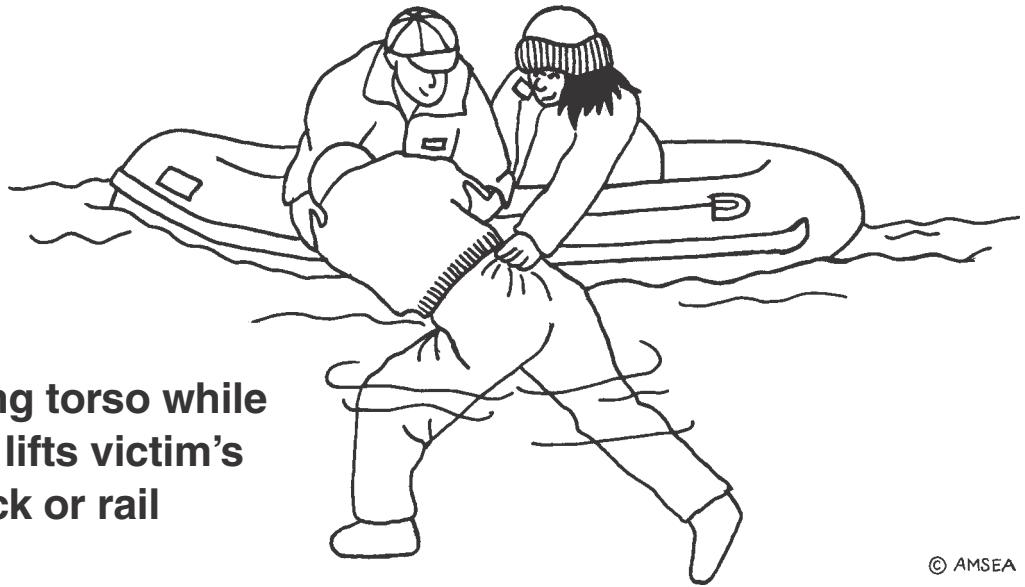
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Two Person Rescue—Roll

For a victim who is unable to help

1. Guide victim's hands to dock or boat rail
2. Grasp the victim under the arms and lift torso to edge of dock or rail



3. Hold and swing torso while other rescuer lifts victim's knee onto dock or rail

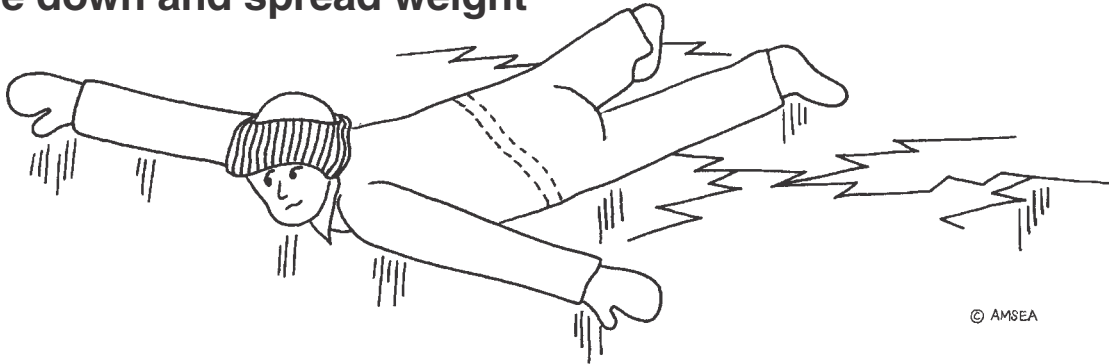


4. Both rescuers reach across victim to opposite hip, grab clothing or body, and roll into boat or onto dock

Self-Rescue from Cracked Ice

What to do when the ice cracks or starts to break under you

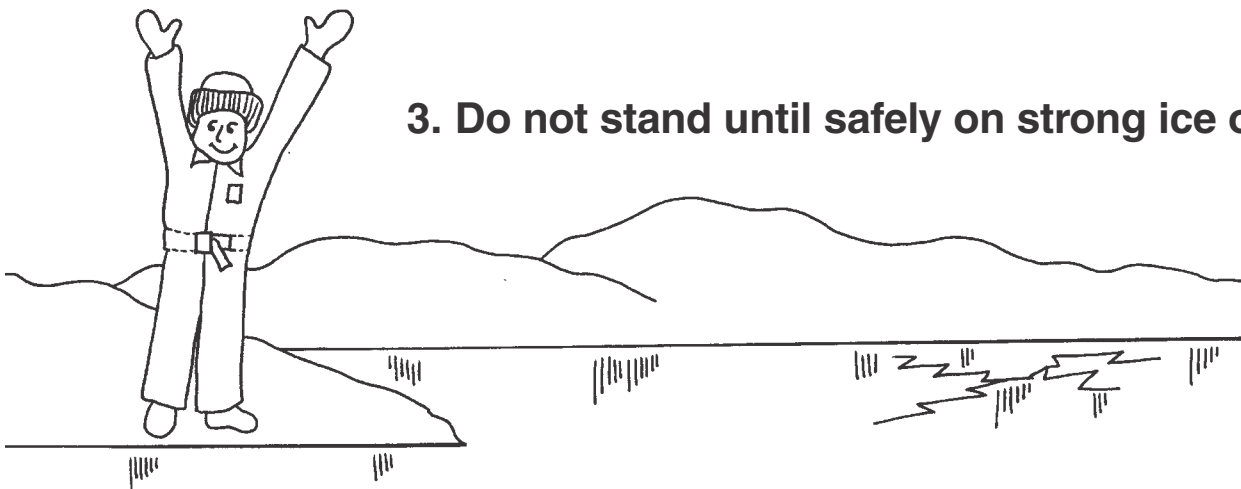
1. Lie down and spread weight



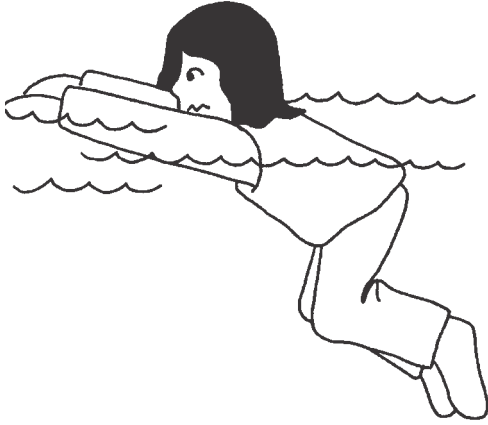
2. Crawl or roll back the way you came



3. Do not stand until safely on strong ice or land

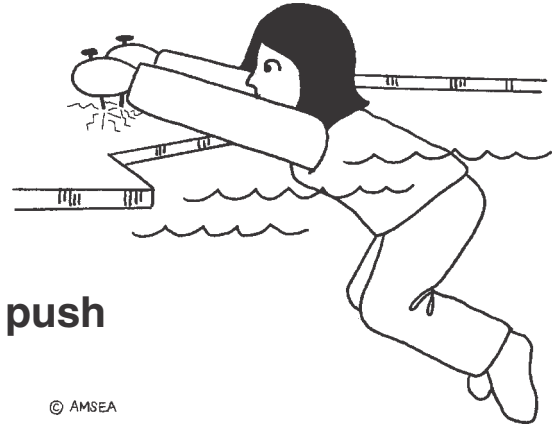


Self-Rescue from a Fall through Ice



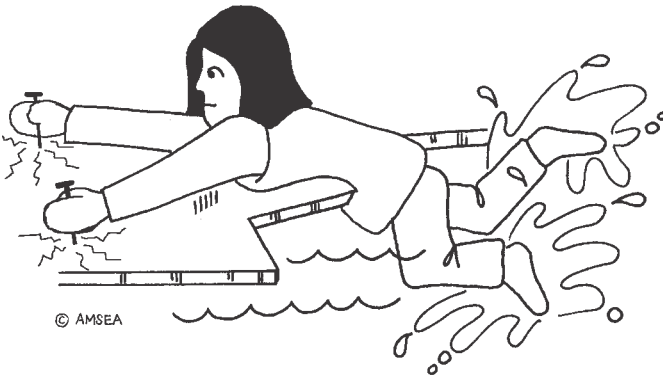
© AMSEA

1. Float on your stomach.
Bend your knees.



© AMSEA

2. Reach forward onto unbroken ice. Do not push down on ice.

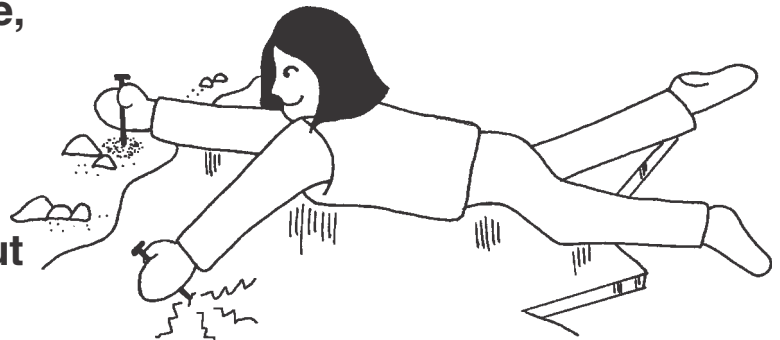


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3. Use a strong flutter kick to push yourself out of the water.

4. Use ice awls, a sheath knife, metal picks, or ski poles to provide traction to pull yourself onto ice.

5. When on the ice, spread out your arms and legs. Crawl or roll to safety.



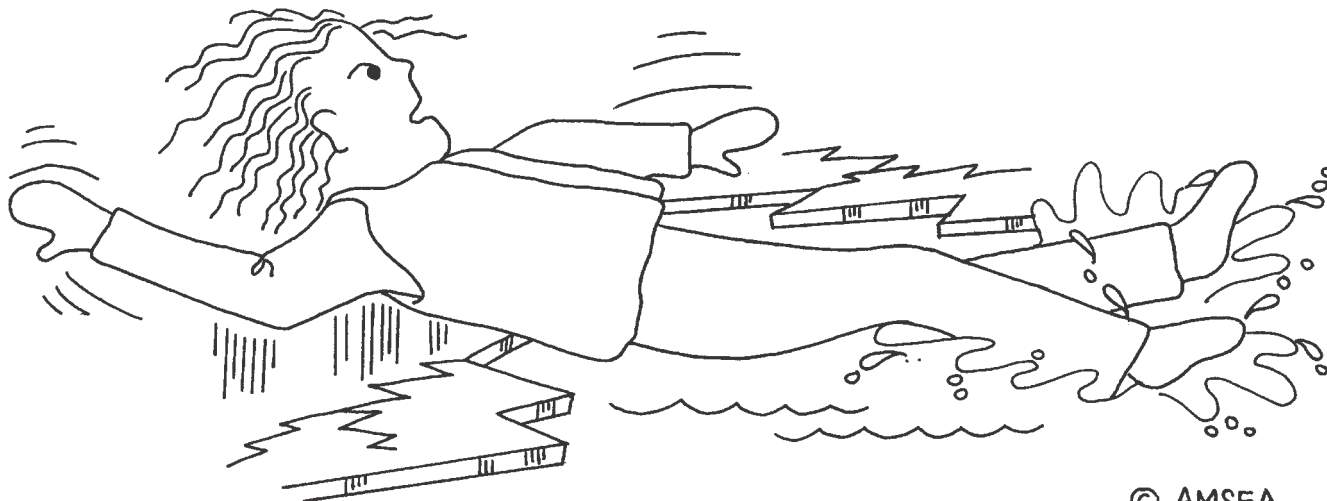
© AMSEA

Stand up only when you know you are safe.

Another Way to Rescue Yourself

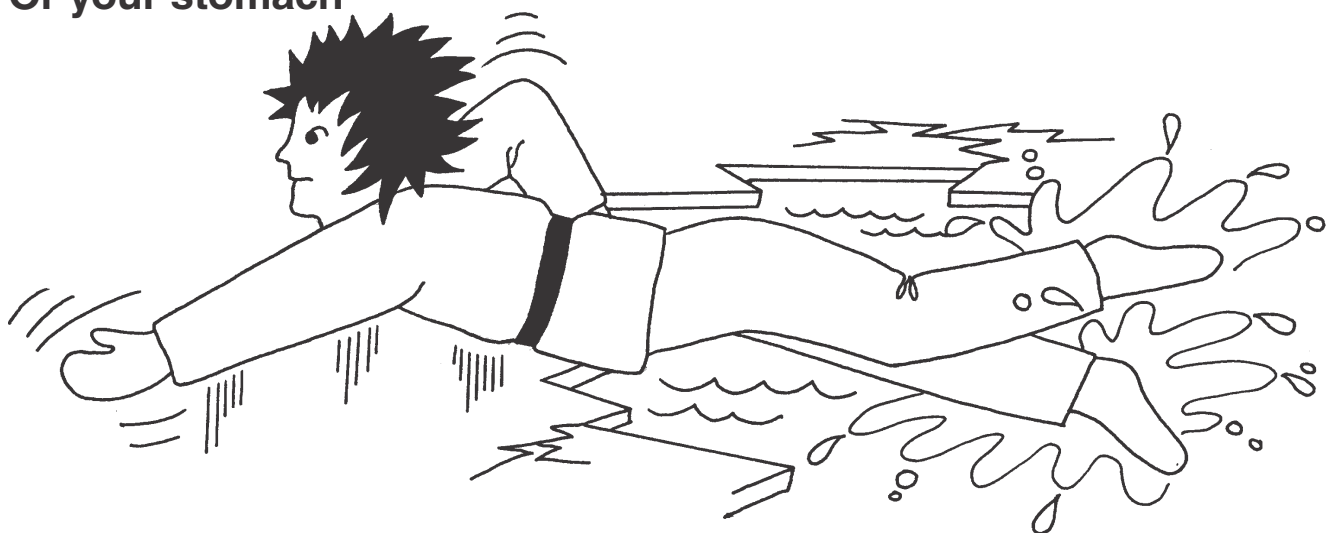
If you fall through the ice, you can swim out of the hole

On your back



© AMSEA

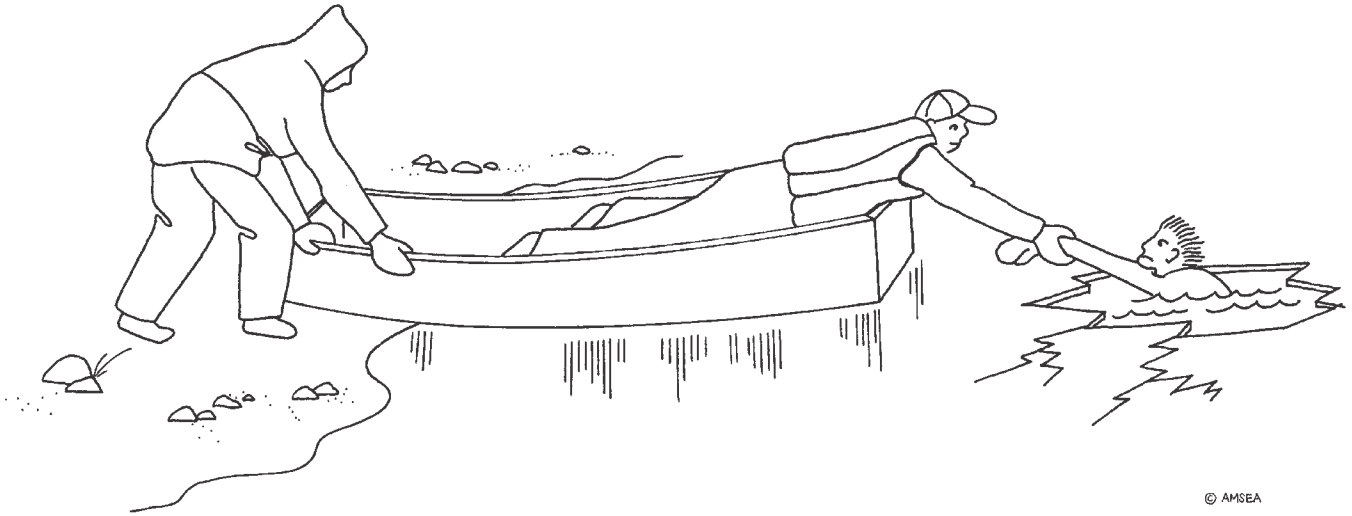
Or your stomach



© AMSEA

Be sure to use your strongest flutter kick!

Rescuing Someone Else from the Ice



Stand, kneel, or lie on bigger rigid object like ladder or boat



Reach to victim with line, branch, or other object

Drowning Victims May Be Saved

Rescue: Quickly and Safely

- Do not become a victim yourself.
- People who drown in water less than 70°F may be revived.
- Retrieve victim even if the person appears dead.
- Handle victim gently. Protect neck and spine.

Breathe: Start Immediately

- Start rescue breathing as soon as the victim's face is out of the water.
- If the victim vomits, wipe mouth and continue.

Compression

- Check for pulse. If none, place patient on a hard surface and start chest compressions.
- Continue CPR.

Transport: Continue CPR

- Get the patient to the nearest medical facility.
- If transport takes more than 15 minutes, protect from further heat loss.
- CPR should not be interrupted for more than 10 seconds.

Keep Trying

- People who have been under cold water for up to an hour have been successfully revived with no brain damage.
- CPR keeps someone alive until you get medical help, but you may not be able to revive them.

Resources

General References

- Alaska Boater's Handbook*. Anchorage, AK: Division of Parks and Outdoor Recreation, Office of Boating Safety, 2000. Covers many aspects of boating including hypothermia, PFDs, and cold water survival skills. 47 pages.
- Beating the Odds on the North Pacific: A Guide to Fishing Safety*. Jensen, Susan, ed. Fairbanks, AK: University of Alaska Sea Grant, 1994. Award winning book covering preparation, weather, handling fishing gear, fatigue, personal flotation devices (PFDs), man overboard, sea survival, shore survival, first aid, fire fighting, rules of the road, basic navigation and stability, anchoring, grounding, float plans, radio use, orientation and drills. 244 pages.
- Chapman's Nautical Guides: Emergencies at Sea*. Stapleton, Sid. New York: Hearst Marine Books, 1991. Easy-to-use format covering abandoning ship, fire, grounding, heavy weather, helicopter evacuation, hull damage, man overboard, medical emergencies, navigation emergencies, loss of propulsion and steering, emergency use of radios. 223 pages.
- Cold Can Kill: Hypothermia*. Hall, Christine Betz. Fairbanks, AK: University of Alaska Sea Grant, 1994. Basic information about hypothermia written with a simple vocabulary and large print. 18 pages.
- Cold Water Kids*. Allen, Marian, Susan Jensen, and Kristie Sherrodd. Sitka, AK: Alaska Marine Safety Education Association, 1992. Curriculum/activity book for elementary grades covering hypothermia, PFDs, boating/swimming safety, and ice safety. 179 pages.
- Cold Water Near-Drowning*. Fairbanks, AK: University of Alaska Sea Grant, 1990. A self-study workbook designed to accompany the *Cold Weather Safety and Survival* videotape series, *Cold Water Near-Drowning* video. Steps in treating the victim, including cardiopulmonary resuscitation (CPR), are described and illustrated in the workbook. 19 pages.
- Cold Water Safety and Survival Supplement*. Allen, Marian. Sitka, AK: Sitka Migrant Education Program, 1994. Activities to supplement *Cold Water Kids*. Covers cold water survival skills, hypothermia, seven steps to survival, and preparation for a boat trip. No teacher background information. 53 pages.
- Federal Requirements and Safety Tips for Recreational Boaters*. Washington, DC: U.S. Coast Guard Office of Boating Safety, 1998. Handy, easy-to-use booklet. 49 pages.
- Frostbite and Other Cold Injuries*. Fairbanks, AK: University of Alaska Sea Grant, 1990. A self-study workbook designed to accompany the *Cold Weather Safety and Survival* videotape series, *Frostbite and Other Cold Injuries* video. Explains how to prevent, identify, and treat frostnip, frostbite, and immersion foot. 20 pages.
- Hypothermia*. Fairbanks, AK: University of Alaska Sea Grant, 1992. A self-study workbook designed to accompany the *Cold Weather Safety and Survival* videotape series, *Hypothermia* video. Tells how to prevent, recognize, and treat hypothermia as well as how to wear flotation and thermal protection devices and the advantages and disadvantages of each. 20 pages.
- Hypothermia and Cold Stress*. Lloyd, Evan L. Rockville, MD: Aspen Publication, 1986. Thorough survey of hypothermia research up to 1986. Technical. 400 pages.
- Hypothermia, Frostbite, and Other Cold Injuries*. Wilkerson, James A., M.D., ed. Seattle: The Mountaineers, 1986. A very readable book on cold injuries. Articles by the editor and Drs. C. Bangs and J. Hayward. Handy field guide format. 105 pages.
- Making Waves at Lakes and Rivers*. Seattle: Children's Hospital and Regional Medical Center, 2000. A curriculum for teens focusing on decision making in PFD use. 44 pages.
- Marine Safety Instructor Manual*, 8th edition. Dzugan, Jerry, et al. Sitka, AK: Alaska Marine Safety Education Association, 2001. In-depth curriculum covering preparation, cold water near-drowning, hypothermia, cold water survival, sea survival including drills and station bills, shore survival, and food and water in a survival situation. Excellent resource. 450 pages.
- Marine Survival Equipment and Maintenance*. Pennington, Hank. Fairbanks, AK: University of Alaska Sea Grant, 1990. Guide covering immersion suits and other emergency equipment. 26 pages.

Outdoor Survival Training for Alaska's Youth.

Garza, Dolly. Fairbanks, AK: University of Alaska Sea Grant, 1993. Curriculum for upper elementary through middle school students covering preparation, shore survival, cold water survival skills, and personal flotation devices (PFDs), including immersion suits. Includes a waiver form, worksheets, quizzes, and student workbooks. 102 pages.

Personal Flotation Devices. Sitka, AK: Alaska Marine Safety Education Association, 1990. Brochure with overview of U.S. Coast Guard approved and nonapproved PFDs.

State of Alaska Hypothermia and Cold Water Near-Drowning Guidelines. Juneau, AK: Department of Health and Social Services, Division of Public Health, Emergency Medical Services Section, 1996. Provides step-by-step treatment guidelines for the named conditions. 32 pages.

Shore Survival. Fairbanks, AK: University of Alaska Sea Grant, 1986. A self-study workbook designed to accompany the *Fisheries Safety and Survival* series, *Shore Survival* video. Covers basic survival principles, including making decisions, building a shelter, making signals, what to eat and drink, and how to keep your spirits up. 39 pages.

Survival Guide for the Mariner. Meurn, Robert J. Centreville, MD: Cornell Maritime Press, 1997. Guide covering preparation, station bills, emergency equipment, man overboard, abandon ship, first aid, navigation, hypothermia, survival in a liferaft, survival on land, search and rescue (SAR), helicopter rescues. 225 pages.

Using Small Boats in Alaska Is a Way of Life—Don't Make It a Way to Disaster. Sitka, AK: Alaska Marine Safety Education Association, 1990. Brochure that covers preparation, float plans, stability, equipment, and cold water near-drowning.

Water Lover's Guide to Marine Medicine. Gill, Paul. New York: Simon and Schuster, 1993. Guide to first aid on boats. 255 pages.

Water Rescue: Basic Skills for Emergency Responders. Smith, David S. and Sara J. Smith. St. Louis, MO: Moseby-Yearbook, Inc., 1994. Guide covering drowning, alcohol, causes of water accidents, rescue principles, team rescue. 368 pages.

Water Wise. Dzugan, Jerry and Susan Jensen. Fairbanks, AK: University of Alaska Sea Grant, 1999. Award winning safety book for coastal and ocean recreational mariners, nationwide. 196 pages.

Survival Stories

Adult Level

Adrift. Callahan, Steven. New York: Ballantine, 1987. Callahan's story of surviving 76 days in the Atlantic in a liferaft. 344 pages.

Almost Too Late. Wortman, Elmo. New York: Random House, 1981. A true story of a family shipwrecked off southeastern Alaska for three weeks. Some of it serves as a study of what not to do, but provides good discussion for ways to improve a survival situation. 211 pages.

Capsize: A Story of Survival in the North Atlantic. Wakeman, Alan, translated by Nicholas Angel. New York: W.W. Norton and Co., 1980. 178 pages.

Desperate Journeys, Abandoned Souls. Leslie, Edward. Boston: Houghton Mifflin Co., 1988. True short stories of survival from several centuries. 586 pages.

Endurance. Lansing, Alfred. New York: Carol and Graf, 1986. Amazing true survival story of Shackleton's Antarctic voyage. 292 pages.

Fastnet Force 10. Rousmaniere, John. New York: W.W. Norton and Co., 1980. Story of a storm off the coast of Great Britain during a yacht race. 287 pages.

Five against the Sea. Arias, Ron. New York: Penguin Books USA, 1990. Story of five Costa Rican coastal fishermen who, after a storm cripples their small boat, spend 142 days in the Pacific before a Japanese freighter picks them up. 302 pages.

"Night of the Blue Bird." Sykora, Allen. In: *Reader's Digest*, January 1990. Story of a Sitka, Alaska man and his son who get rescued by the U.S. Coast Guard during a storm.

"Lost at Sea." In: *Oceans Magazine*, June 1986. A collection of rescue at sea stories.

Nights of Ice. Walker, Spike. New York: St. Martin's Press, 1987. Riveting account of king crab fishing in Alaska in the 1980s. 206 pages.

On Their Own. Horder, Mervyn. London: Gerald Duckworth and Co. Ltd., 1988. Sixteen survival tales, between AD 62 and 1942, recounted. 140 pages.

One Survived. Fortier, E. Anchorage, AK: Alaska Northwest Publishing Co., 1978. A true story of an Eskimo hunting party. Three are lost on ice floes and one survives for 21 days. 41 pages.

Our Last Chance. Butler, Bill, and Simonne Butler. Miami: Exmart Press, 1991. Story of a couple surviving 66 days in a life raft in the Pacific in which they become very religious. 313 pages.

The Perfect Storm. Junger, Sebastian. New York: W.W. Norton Co., 1997. The story of the “storm of the century” in the North Atlantic and several fishing boats caught in it. 227 pages.

The Raft. Trumbull, Robert. Annapolis, MD: Naval Institute Press, 1992. True account of the survivors of a plane crash in the Pacific during World War II. 205 pages.

Rough Water. Willis, Clint. New York: Balliett and Fitzgerald, 1999. Collection of well-known stories of survival at sea. 354 pages.

Saved by the Jacket. National Safe Boating Council. Delaware, OH, 2000. Survival stories of people saved by wearing PFDs. 63 pages.

The Spirit of Rose-Noelle. Glennie, John, and Jane Phare. New York: Fawcett Crest, 1990. Story of a crew on a sailboat off the coast of New Zealand who survive 119 days in the half-flooded cabin of their overturned trimaran. 240 pages.

Staying Alive: 117 Days Adrift. Bailey, Maurice D. New York: McKay Co., 1974. A true story of a couple surviving at sea for 117 days. 192 pages.

Survive the Savage Sea. Robertson, Dougal. Dobbs Ferry, NY: Sheridan House, 1973. Story of a family whose sailboat is attacked and sunk by killer whales in the Pacific and their journey in their dinghy. 217 pages.

Juvenile Level

Adrift! Politano, C., and J. Neudecker. Sidney, British Columbia: Porthole Press Ltd., 1986. Covers a lost-in-a-dinghy experience. Included activities appropriate for all elementary grades. 61 pages.

Great Survival Adventures. Gannon, R. New York: Random House, 1973. True stories against great odds recounted by men and women who lived them. 149 pages.

Life Battles Cold. Kavalier, L. New York: John Day Co., 1973. Various aspects of living or responding to cold environments. 160 pages.

Trial by Wilderness. Mathieson, D. Boston: Houghton Mifflin Co., 1985. Account of a girl surviving a plane crash in British Columbia. 171 pages.

Williwaw! Bodett, Tom. New York: Knopf, 1999. Story of two rural Alaska teens who face a sea survival situation. 192 pages.

Video Resources

All videos are available for loan to teachers from the AMSEA library, (907) 747-3287.

General

Cross Cultural Communication. Alaska Marine Safety Education Association. 1994. Father Michael Oleksa discusses communication across culture and gender lines. 42 minutes.

Environmental/Medical

The Cold Facts: Surviving Sudden Cold Water Immersion. Ottawa: Canadian Forces, 1998. 22 minutes.

Cold Water Casualty. UK Institute of Naval Medicine, 1991. Describes the effects of cold water immersion on the human body and first aid treatment required by immersion casualties. WARNING: Shows rewarming of victim in water, which is not recommended by *State of Alaska Cold Injuries and Cold Water Near-Drowning Guidelines*. 28 minutes.

Cold Water Near-Drowning. University of Alaska Marine Advisory Program, 1983. Part of the *Cold Weather Safety and Survival* series. Learn to properly treat a cold water near-drowning victim; including demonstration of CPR on an adult. Companion self-study workbook is available (see general reference section). 20 minutes.

Cold, Wet, and Alive. American Canoe Association, 1989. Follows a group of friends on a canoe trip down a river, showing the progression from cold reaction to severe hypothermia. What is defined as severe hypothermia in Alaska is called moderate hypothermia in the video and treated accordingly. 20 minutes.

Dive Emergencies. Southeast Region EMS Council, Sitka, Alaska, 1990. Lecture by dive instructor Bob Boes. 60 minutes.

Frostbite and Other Cold Injuries. University of Alaska Marine Advisory Program, 1988. Four types of cold injuries and their treatments are covered in this video. How to prevent cold injuries and how to avoid situations that could cause them are also explained. 16 minutes.

Hypothermia. University of Alaska Marine Advisory Program, 1986. Part of the *Cold Weather Safety and Survival* series. Demonstrates the danger of hypothermia on a fishing boat, how to recognize hypothermia, what to do about it, and how to prevent it. Companion self-study workbook is available (see general reference section). 15 minutes.

- Hypothermia Lecture: Nemiroff.* Alaska Marine Safety Education Association, 1983. Martin Nemiroff, M.D., lectures on cold water near-drowning. 60 minutes.
- Hypothermia Lecture: Nemiroff.* Alaska Marine Safety Education Association, 1988. Martin Nemiroff, M.D., lectures on cold water near-drowning. 60 minutes.
- A New Look at Cold Water Near-Drowning.* 20/20, 1987. In-depth look at cold water near-drowning, including an interview with Dr. Martin Nemiroff and others. 30 minutes.
- Sea Survival.* University of Alaska Marine Advisory Program, 1983. Shows the seven steps to survival; how to use a liferaft; how to conserve body heat, energy, and water on a liferaft; and how to safely board a rescue helicopter. 21 minutes.
- Shore Survival.* University of Alaska Marine Advisory Program, 1983. The Seven Steps to Survival are demonstrated in this video, as well as vital survival skills such as how to build an emergency shelter from materials at hand, how to create signals, and how to use resourcefulness and ingenuity to stay alive. 22 minutes.
- Thermal Protection in Anti-Exposure Suits.* 1987. U.S. Coast Guard CDR Al Steinman lectures on anti-exposure suits. 2 hours.

Vessel Safety

- Adventures in Boating.* Washington State Parks and Recreation Commission and KCTS TV, 1992. Features Bill Nye the Science Guy. Great for kids. Note: Shows the HELP position incorrectly. 30 minutes.
- Alcohol and Boating? It's Your Choice.* Alaska Marine Safety Education Association and University of Alaska Marine Advisory Program, 1994. Discusses risks of alcohol and boating. Activity guide is also available. 20 minutes.
- Boating and Boozing.* 20/20, 1988. Real footage of drownings and other disasters. 14 minutes.
- Danger, Thin Ice!* Minnesota Dept. of Natural Resources Boat and Water Safety, 1993. Ice safety for anglers, snowmobilers, cross country skiers, etc. 10 minutes.
- Heat and Cold.* ABC Dateline, Survivor, December 1996. Bill Nye the Science Guy snowed-in in South Dakota and in a liferaft in Hawaii. 13 minutes.
- It Could Have Been Prevented.* University of Alaska Marine Advisory Program/Alaska Marine Safety Education Association, 1990. Produced for people who spend time in a boat on rivers or coastal water in Alaska. This award winning video shows real people making life and death decisions and the consequences of their actions. Covers planning, weather, float plans, stability, personal flotation devices, boater's hypnosis, effects of alcohol. Good for many audiences. 17 minutes.
- Longfellow's WHALE (Water Habits Are Learned Early) Tales.* American Red Cross, 1988. Water safety video for K-6. There is one shot in this video of children in a recreational craft wearing PFDs but the driver not wearing any flotation. 14 minutes.
- Rescue: 76 Days in the North Atlantic.* Film and LYD Denmark, 1982. Interview with Steve Callahan about liferaft survival. 27 minutes.
- Taken by Surprise.* Alaska State Troopers. Ice safety and victim interviews. 29 minutes.
- Water: The Deceptive Power.* American Red Cross, 1990. Water safety documentary. 30 minutes.

Commercial Fishing

- Air-Sea Rescue Procedures.* University of Rhode Island/U.S. Coast Guard. Covers hoists, equipment deliveries, rescue from rafts, and water rescue. 12 minutes.
- Boating Casualties: The Wave, Linda's Draw, Aleutian Enterprise Rescue, Alaska Monarch, Cape Beaver/Margaret Jane Collision.* Alaska Marine Safety Education Association. Compilation of raw footage of boating casualties. 9, 14, 25, 23 minutes. Total time is 71 minutes.
- Casualties at Sea: Cape Beaver/Margaret Jane Collision, The Wave, Linda's Draw, Alaska Monarch Grounding, All Alaska Fire, Rudder Fire, Prime Time Fire.* Alaska Marine Safety Education Association. Compilation of raw footage of boating casualties. 32 minutes.
- Emergency Position Indicating Radio Beacons.* John Sabella and Associates, Inc., 1989. Types of EPIRBs, how they work, installation, maintenance, testing, and use. 15 minutes.
- Fisheries Safety and Survival Series.* University of Alaska Marine Advisory Program, 1983. Includes Hypothermia, Cold Water Near-Drowning, Sea Survival, and Shore Survival. 9, 14, 20, 20, 21 minutes. Total time is 75 minutes. See environmental/medical section for complete listing of all four videos.

Immersion Suits. John Sabella and Associates, Inc., 1989. Covers testing your suit, donning, leaving the vessel, in the water, inspection, and stowage. 13 minutes.

Inflatable Lift Rafts. John Sabella and Associates, Inc., 1989. Covers the decision to abandon, installation, launching, boarding, and equipment. 16 minutes.

Lifesling. Lifesling Sailing Foundation. Demonstrates use of Lifesling man overboard device on commercial and recreational vessels. 8 minutes.

Personal Flotation Devices. John Sabella and Associates, Inc., 1989. Covers clothing, flotation, types of PFDs, fit, how they work, and in the water. 17 minutes.

Race for Fish. Alaska Longline Fisherman's Association, 1992. Photographs and a discussion of safety in commercial fisheries with short openings. 28 minutes.

Saving Fishermen's Lives. U.S. Coast Guard, 1992. 20 minutes.

Strategy for Survival. Seattle Fisherman's Memorial, 1992. Interviews with fishermen and families, actual footage of boating casualties. 12 minutes.

Visual Distress Signals. John Sabella and Associates, Inc., 1989. What attracts attention, radio signals, pyrotechnics, and lights. 14 minutes.

When Seconds Count: Care and Use of Immersion Suits. Alaska Marine Safety Education Association. 1998. Covers the storage, maintenance, features, donning instructions, and use of immersion suits. 16 minutes.

Contact Information for Resources

Alaska Marine Safety Education Association (AMSEA)
P.O. Box 2592
Sitka, AK 99835
(907) 747-3287

Alaska Office of Boating Safety
Division of Parks and Outdoor Recreation
550 West Seventh Avenue, Room 1380
Anchorage, AK 99501-3561
(907) 269-8705

U.S. Coast Guard 17th District
Maritime Office of Compliance (MOC)
P.O. Box 25517
Juneau, AK 99802-5517

Fishing Vessel Safety Office
(907) 463-2286, 1-800-478-7369

Recreational Boating Safety Office
(907) 463-2297

Boating Safety Coordinator OSR-3
(907) 463-2297
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University of Alaska Sea Grant
P.O. Box 755040
Fairbanks, AK 99775-5040
toll free (888) 789-0090

Alaska Department of Health and Social Services
Division of Public Health
Community Health and Emergency Medical Services
P.O. Box 110616
Juneau, AK 99811-0616
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